March 26, 1956

Who Makes a Good Supervisor? . . . p. 22

RAILWAY AGE

WORKBOOK OF THE RAILWAYS

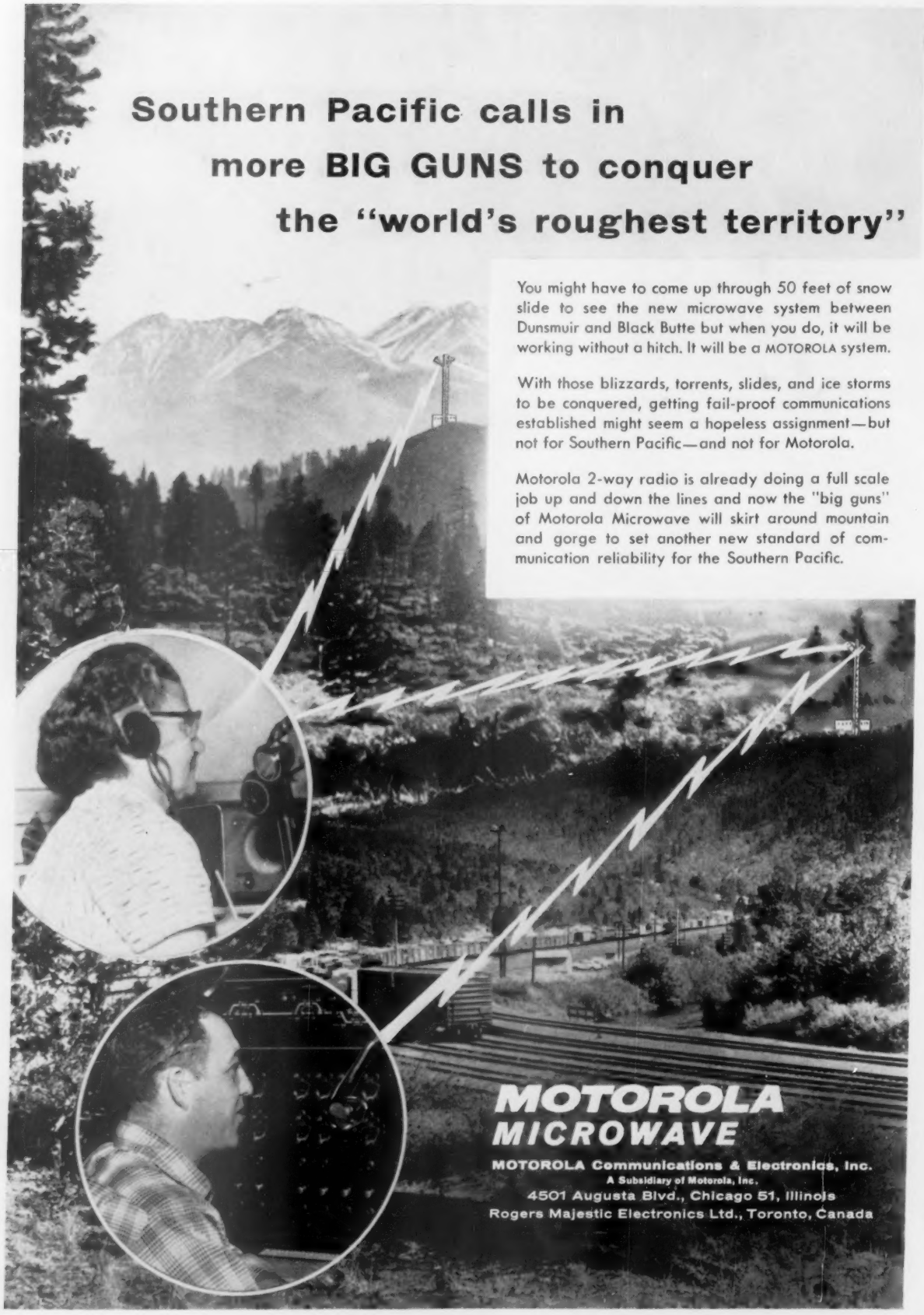
THE INDUSTRY'S ONLY WEEKLY NEWSMAGAZINE

5 GM DIESEL "BOOSTERS" FOR THE CLINCHFIELD

To take care of increased freight tonnage, the Clinchfield has added five General Motors F9B units to its Diesel fleet. These 1750-H.P. "boosters" give the road's operating department additional capacity to handle longer freight trains with 3- and 4-unit multiples. Electro-Motive pioneered the "building block" system which permits boosting motive power to meet train requirements—and this flexibility continues to pay off on both large railroads and small. Need more units? We'll be glad to discuss your requirements.

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS • LA GRANGE, ILLINOIS
Home of the Diesel Locomotive
In Canada: GENERAL MOTORS DIESEL, LTD., London, Ontario

GENERAL MOTORS LOCOMOTIVES


Southern Pacific calls in
more BIG GUNS to conquer
the "world's roughest territory"
You might have to come up through 50 feet of snow slide to see the new microwave system between Dunsmuir and Black Butte but when you do, it will be working without a hitch. It will be a MOTOROLA system.
With those blizzards, torrents, slides, and ice storms to be conquered, getting fail-proof communications established might seem a hopeless assignment—but not for Southern Pacific—and not for Motorola.
Motorola 2-way radio is already doing a full scale job up and down the lines and now the "big guns" of Motorola Microwave will skirt around mountain and gorge to set another new standard of communication reliability for the Southern Pacific.
MOTOROLA
MICROWAVE
MOTOROLA Communications & Electronics, Inc.
A Subsidiary of Motorola, Inc.
4501 Augusta Blvd., Chicago 51, Illinois
Rogers Majestic Electronics Ltd., Toronto, Canada

400 New Hopper Cars Take the Rails for Western Maryland

A new fleet of triple-hopper cars, 400 in all, is now hauling coal for the progressive Western Maryland.

Designed by Bethlehem, these 70-ton (nominal capacity) units are typical of the modern trend in freight cars. They are equipped with multiple-wear wheels and roller bearings; Mayari R high-strength, low-alloy steel in heavier-than-normal gages was used in their construction. Features such as these contribute to safe, dependable service with reduced maintenance and repair costs.

The entire order of 400 hopper cars was built in the Bethlehem shops at Johnstown, Pa. It is an excellent example of what Bethlehem can furnish in open-top designs. For many years the nation's great carriers have come to Bethlehem for freight cars, and today we're equipped to do a bigger job than ever before. Just name the type of car you have in mind; we'll design it subject to your approval, or do the building to your own specifications.

Seated at the table are the three Western Maryland representatives who inspected the first of the hopper cars at Bethlehem's Johnstown shops. They are, left to right, T. B. Davis, Master Car Builder; C. J. Wolfe, Superintendent Motive Power (signing acceptance papers); J. L. Triplett, Engineering Assistant to Superintendent Motive Power.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

OVER

18,000

UNION SWITCH STANDS

now in service

And the demand continues. In the last five years alone, over 3400 UNION T-20 and T-21* Switch Stands have been installed. Significantly, this trend parallels the extensive improvement programs initiated to adapt track structures to higher train speeds.

Here's why—

UNION Switch Stands are more than devices for throwing switches. Their design also incorporates in the one mechanism, facilities for locking the points when normally positioned, and—by means of a point detector and built-in circuit controller—checking that (1) the lock rod is actually locked and (2) the points are properly positioned.

With these extra safety features, UNION Switch Stands provide protection equivalent to that of interlocked switches. Ask any of our district offices for full details.

* **UNION T-20 and T-21 Switch Stands are identical, except that the latter includes a built-in target drive assembly.**

UNION SWITCH & SIGNAL

DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

RAILWAY AGE

EDITORIAL AND EXECUTIVE OFFICES AT 30 CHURCH STREET, NEW YORK 7, N. Y., AND 79 WEST MONROE STREET, CHICAGO 3, ILL.

EDITOR ..... James G. Lyne
EDITOR EMERITUS ..... Samuel O. Dunn
EXECUTIVE EDITOR .. William H. Schmidt, Jr.
MANAGING EDITOR ..... C. B. Tavenner
NEWS & FINANCIAL ..... Fred C. Miles
WASHINGTON EDITOR ..... Walter J. Taft
WESTERN EDITOR ..... M. H. Dick

TRAFFIC & TRANSPORTATION
Joe W. Kizzia — John W. Milliken
Gardner C. Hudson

MECHANICAL ..... H. C. Wilcox
G. J. Weihofen — F. N. Houser, Jr.
ELECTRICAL ..... Alfred G. Oehler
ENGINEERING ..... M. H. Dick
R. E. Dove — H. H. Hall

SIGNALING & COMMUNICATIONS
John H. Dunn — Robert W. McKnight

REGIONAL NEWS
New York ..... Robert B. Keane
Chicago ..... Thomas H. Desnoyers

PRESENTATION ..... Franklin Ryan
ASSOCIATE EDITOR ..... Charles Layng
LIBRARIAN ..... Edith C. Stone

EDITORIAL ASSISTANTS
Ann Ortlinghaus — June Meyer
Shirley Smith — Wanda Brown

DIRECTOR OF PRODUCTION
M. J. Figa, Jr., New York

PUBLISHER
Robert G. Lewis, New York

ADVERTISING SALES DEPARTMENT

New York 7, N.Y., 30 Church St., WO-4-3060	J. S. Crane C. W. Merriken J. S. Vreeland F. Baker
Chicago 3, Ill., 79 W. Monroe St., RA-6-0794	J. R. Thompson F. W. Smith H. R. Dunlop J. D. Dolan
Cleveland 13, O. Terminal Tower, MA-1-4455	H. H. Melville
Dallas 19, Tex., 3908 Lemmon Ave., Lakeside 2322	Joseph Sanders
Los Angeles 17, Cal., 1127 Wilshire Blvd., MA-6-0553	Fred Klaner, Jr.
Portland 5, Ore., 1220 S.W. Morrison, BR-4993	L. B. Conaway
San Francisco 4, Cal., 244 California St., GA-1-7004	Lewis Vogler
London E.C. 2, Eng. 48 London Wall	Sibley-Field Publishing Co., Ltd.
Frankfurt am Main (16), West Germany, Wittelsbacher Allee 60	International Advertising Agency

Published weekly by the Simmons-Boardman Publishing Corporation at Orange, Conn., and entered as second class matter at Orange, Conn. James G. Lyne, president. Arthur J. McGinnis, executive vice-president and treasurer. J. S. Crane, vice-president and secretary.

SUBSCRIPTION TO RAILROAD EMPLOYEES ONLY IN U. S., U. S. POSSESSIONS, CANADA AND MEXICO, $4 ONE YEAR, $6 TWO YEARS, PARABLE IN ADVANCE AND POSTAGE FREE. TO RAILROAD EMPLOYEES ELSEWHERE IN THE WESTERN HEMISPHERE, $10 A YEAR; IN OTHER COUNTRIES, $15 A YEAR—TWO-YEAR SUBCRIPTIONS DOUBLE ONE-YEAR RATE. SINGLE COPIES 50c. EXCEPT SPECIAL ISSUES $1. CONCERNING SUBSCRIPTIONS WRITE R. C. VAN NESS, CIRCULATION DIRECTOR, 30 CHURCH ST., NEW YORK 7.

13
Vol. 140, No. 12
March 26, 1956

CONTENTS and Week at a Glance

"Train X" in Service Soon . . .

. . . Latest entry in the field of low-cost, low-contour lightweight trains, Pullman-Standard's "Train X," is in final stage of construction at the manufacturer's Chicago plant. The problems of noise and vibration are thought to have been overcome by what Pullman-Standard calls "acoustic design." First "Train X" is being rushed for delivery to the New York Central late next month. . . . p.7

BRT Chief Sees Bright Passenger Future . . .

. . . We are on the "threshold of a new era" in which passenger-train operations will come back "into their own" and "at a profit," W. P. Kennedy, president of the Brotherhood of Railroad Trainmen, said at last week's annual dinner of the Federation for Railway Progress. . . . p.8

NYC Plans System-Wide Freight Yard Revamp . . .

. . . Plans for revamping and streamlining freight yard facilities throughout its entire system were revealed last week by the New York Central. First phase of the project, involving expenditure of over $25,000,000, will be overhaul of yards at Buffalo, Youngstown and Elkhart. Detailed announcements of other portions of the program will be made when current studies are completed. . . . p.10

The Case of the One-Sided Umbrella . . .

. . . In a recent ICC "proposed report" in a competitive rate case, the examiner comes up with a classic interpretation of the law, which would force railroads to continue higher rates than their costs require, in order to "protect" a barge line which probably cannot meet the proposed rail rate. If that is the law, then the law needs changing. . . . p.21

Who Makes a Good Supervisor? . . .

. . . This second article in the Railway Age series, "The Better Supervisors Get Promoted," gets down to specifics in listing the qualifications that distinguish the effective supervisor from one who is mediocre. . . . p.22

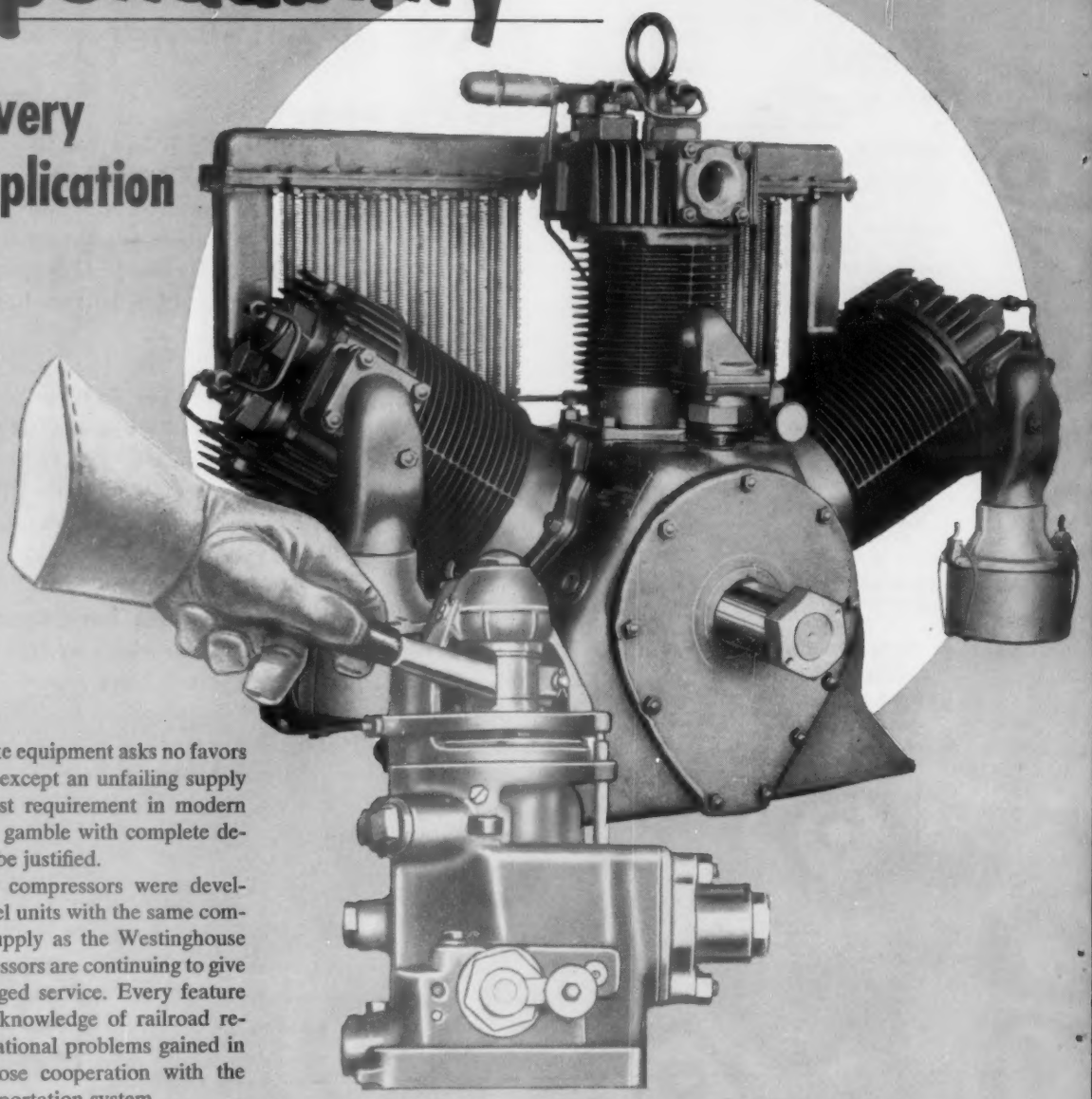
Electronic Scale Put to Test . . .

. . . And results indicate that its use is emerging from the

WESTINGHOUSE CD COMPRESSORS

put dependability

behind every brake application



Westinghouse Brake equipment asks no favors on any assignment—except an unfailing supply of air. That's the first requirement in modern train control, and no gamble with complete dependability can ever be justified.

Westinghouse CD compressors were developed to provide Diesel units with the same completely reliable air supply as the Westinghouse Steam Driven compressors are continuing to give through years of rugged service. Every feature reflects the intimate knowledge of railroad requirements and operational problems gained in over 80 years of close cooperation with the nation's leading transportation system . . .

1. Radiator-type intercooler between high pressure and low pressure cylinders reduces temperature of discharge air and increases efficiency.
2. Full-pressure type lubrication system maintains even, constant flow of filtered oil to connecting rod crankshaft bearings and wrist-pin bearings.
3. Throw-off of oil from connecting rod bearings lubricates cylinder wall and also main crankshaft ball bearings.

Westinghouse Air Brake
COMPANY
AIR BRAKE DIVISION WILMERDING, PA.

Current Statistics

Operating revenues, one month	
1956	$831,622,598
1955	752,487,353
Operating expenses, one month	
1956	$661,410,900
1955	589,237,148
Taxes, one month	
1956	$85,254,760
1955	74,617,307
Net railway operating income, one month	
1956	$62,877,376
1955	68,899,131
Net income, estimated, one month	
1956	$46,000,000
1955	52,000,000
Average price 20 railroad stocks	
March 20, 1956	104.60
March 22, 1955	88.57
Carloadings revenue freight	
Ten weeks, 1956	6,872,024
Ten weeks, 1955	6,376,397
Average daily freight car surplus	
Wk. ended Mar. 17, 1956	3,923
Wk. ended Mar. 19, 1955	33,608
Average daily freight car shortage	
Wk. Ended Mar. 17, 1956	4,606
Wk. ended Mar. 19, 1955	1,518
Freight cars on order	
March 1, 1956	141,437
March 1, 1955	18,663
Freight cars delivered	
Two months, 1956	9,080
Two months, 1955	4,430
Average number of railroad employees	
Mid-February 1956	1,041,021
Mid-February 1955	1,005,836

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX, THE ENGINEERING INDEX SERVICE AND THE PUBLIC AFFAIRS INFORMATION SERVICE. RAILWAY AGE, ESTABLISHED IN 1856, INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE. NAME REGISTERED IN U. S. PATENT OFFICE AND TRADE MARK OFFICE IN CANADA.

Departments

Forum	21
Freight Car Loadings	9
Questions and Answers	16
Railway Market	9
Railway Officers	39
What's New in Products	18

Week at a Glance CONTINUED

experimental stage. Outcome of investigations at the EJ&E Kirk yard were reported to the recent AREA convention by Verne C. Kennedy. . . . p.27

Old Freighthouse Made Like New . . .

. . . So far as capacity to handle LCL volume goes, at any rate. It's done by installation of centralized checking and a modern intercommunication system—that's the news about the CPR at Toronto. . . . p.30

Why the NYC Tests Crankcase Oil . . .

. . . A systematic and systemwide lubricating oil test program, intended to decrease oil consumption and prevent costly engine failures by assuring adequate lubrication, is operated by the New York Central's engineering services organization in close conjunction with other sections of the mechanical department. . . . p.33

Coming—Next Week . . .

. . . Tips on running a truck line. One of the biggest and fastest growing highway operators tells what makes his business a success.

BRIEFS

Lease of SIRT to New York Legalized . . .

. . . Legislation just enacted will permit New York City to lease the St. George-Tottenville line of the Staten Island Rapid Transit, under terms providing for operation of the line by the railroad for the city. Rental payments by the city will be equivalent to all SIRT New York taxes.

Glass Fiber Box Car? . . .

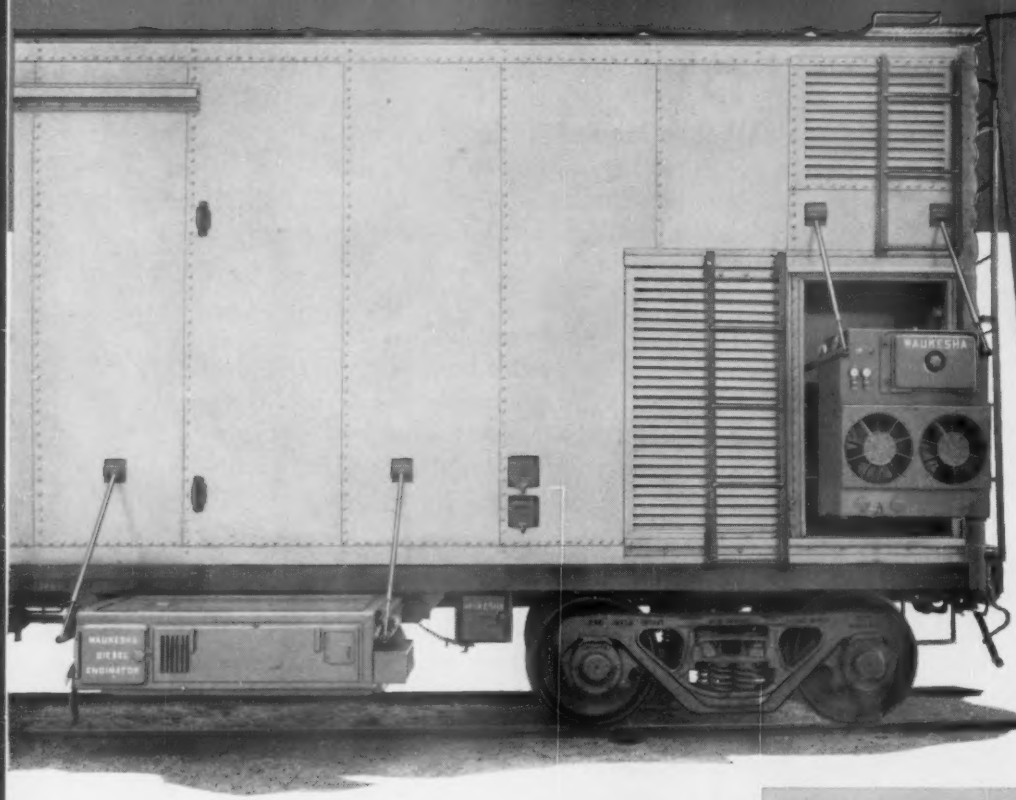
. . . One major railroad and a big railroad supply company are studying the practicability of a box car with doors, sides, ends, roof and even structural members formed from glass fiber.

Passenger Fare Boosts in the Offing . . .

. . . As this issue of Railway Age went to press, plans for a possible 5% increase in passenger fares—excepting commuter rates but affecting most or all U.S. roads—were under discussion. If submitted for ICC authorization they would be slated to become effective simultaneous with May 1 Pullman hike.

WAUKESHA

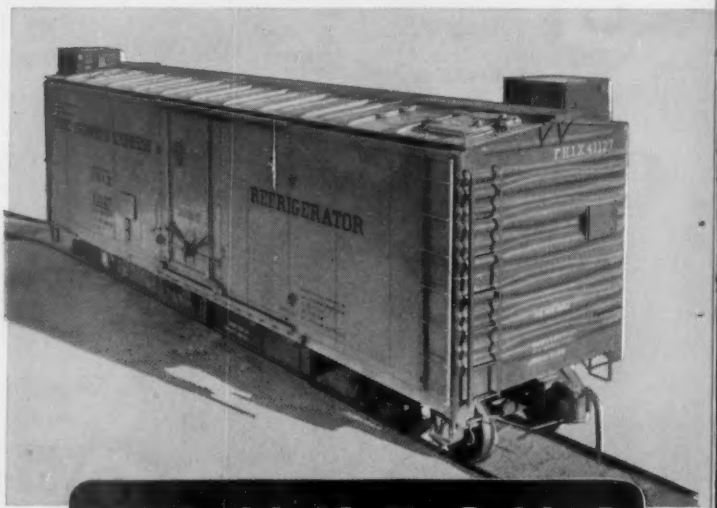
diesel-icer automatic refrigerating and heating system



for NEW railway refrigerator cars

Typical *Inner-Car* Diesel-Icer System installation showing completely packaged cooling-heating unit, consisting of compressor and evaporator sections, and the under-car 20 KW Enginator, both rolled out for routine inspection.

Top-mounted cooling-heating unit installation for conversion of water-ice cars without modification of the car structure.



Automatically-controlled cooling and heating for railway refrigerator cars—with the Waukesha Diesel-Icer Mechanical Refrigeration System!

For new cars, built for mechanical refrigeration — with inner-car cooling-heating units.

For existing ice-cooled cars without modification of the car structure—with top-mounted cooling-heating units.

The Waukesha Diesel-Icer System consists of a 20 KW Enginator (a six-cylinder, 4-cycle Waukesha horizontal Diesel engine direct-connected to a 220-volt, 3-phase, 60-cycle alternator) and two motor-driven Cooling-Heating units for low temperature or all-purpose cars. Only one Cooling-Heating unit is required in cars used exclusively in 35° service.

304

50th ANNIVERSARY Waukesha MOTORS 1906 1956

RAILWAY DIVISION
WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN

WAUKESHA diesel-icer SYSTEM

Largest Builders of mobile, engine-driven Refrigeration and Generator Equipment

"TRAIN X" CAR (above), is dwarfed when placed alongside a conventional 85-ft passenger car. Aluminum car bodies of the new train measure 11 ft high, 51 ft 3 in. long. Windows are 2 ft 2 in. by 5½ ft, with shaded safety glass. End view of "Train X" car (right), shows the new automatic coupler and contact. Overhead automatic connectors will transmit electrical supply through the train. Power is provided by a diesel-driven alternator in the locomotive which provides 480-volt, three-phase 60-cycle a-c current.

"Train X" in Service Soon

Chicago preview shows prototypes taking shape as Pullman-Standard pushes for first delivery in late April—"Acoustic design" seen as answer to noise and vibration

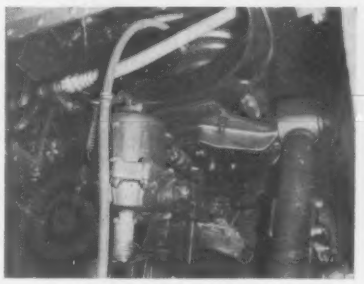
"Train X," latest entry in the field of low-cost, low-contour lightweight trains, is in final stages of construction at Pullman-Standard's Chicago plant.

Production schedules call for delivery of the New York Central's train late next month and the New Haven's by the end of the year (Railway Age, Mar. 18, p. 9). "Train X," with its aluminum construction, is the lightest lightweight so far, says Pullman-Standard. It has a trailing weight of only 700 lb per passenger.

The accompanying pictures highlight certain of the train's major features.

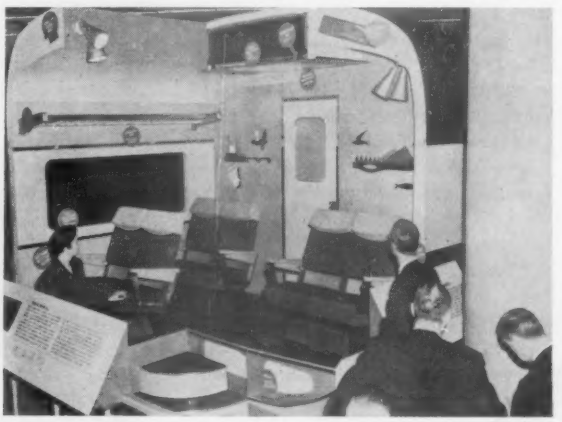
"Train X" cars will cost around $1,200 per seat less than conventional coach equipment, says C. W. Bryan, Jr., president of Pullman-Standard. Based on the building costs for twenty all-coach trains like those being built for the NYC and NH, "Train X" would cost some $1,650 per seat, compared to $2,850 for a standard coach.

Pullman-Standard believes it has licked the noise and vibration prob-



"TRAIN X" AIR SPRING ASSEMBLY, brake cylinder and brake shoe atop the wheel, is shown in this close-up. Noise and vibration have been cut to a minimum.

INTERIOR VIEW shows a 48-seat Train X car under construction. Finished cars will feature blend of accepted colors, textures and patterns. Basket racks are open type aluminum.



FULL SCALE MOCK-UP of Train X's interior shows seating arrangements and interior decor. This model is on display in Pullman-Standard's Chicago show rooms. The completed nine-car train will seat 392 passengers.

lem with the train's "acoustic design." The car interiors are acoustically divorced from car structures through use of isomode pads, vibration mounts, rubber moldings, and soft headlining material. Noise levels are kept low by the use of acoustic baffles, duct lining, insulation, sprayed materials, and other barriers to sound.

The two prototype trains will be equipped with 1,200-hp Baldwin-Lima-Hamilton "Mechydro" hydraulic diesel locomotives. The New York Central train will have a single locomotive, while the New Haven train will have two locomotives, one at each end, equipped for third-rail operation in New York's Grand Central Terminal.

Electric motors will be mounted inside the train's locomotive and drive will be effected through the hydraulic transmission.

Kennedy Sees Bright Passenger Future

Hails new-design equipment as way to recapture business—laments government transport role as many-headed thing—sees new unity in railroad industry to meet common ills

"The threshold of a new era" in which passenger-train operations will come back "into their own" and "at a profit," was proclaimed by railroad labor leader W. P. Kennedy at the ninth annual dinner of the Federation for Railway Progress in Washington, D.C., March 22.

"The American version of the Talgo-type train, 'Train X' and the 'Aerotrains' foreshadow the resurgence of railroad competition for passenger business," he declared.

Mr. Kennedy, president of the Brotherhood of Railroad Trainmen, said his remarks express "the attitude of the thinking of all of us" in the railway labor field. He was main speaker at the dinner which was attended by railroad officers, Senators, Congressmen, members of the Interstate Commerce Commission and other government agencies, and representatives of labor and industry.

Rejecting the idea that passenger deficit figures prove railroads can never regain passenger business they have lost, Mr. Kennedy asserted: "I say it can be done and at a profit." The railroads "have a wonderful opportunity," he said, to coordinate commuter services with in-city transportation lines while, at the same time, "there is every reason to believe that the new type trains can be used to good advantage in service between larger cities."

Competition for passenger business, the BRT chief went on, will be vitally affected by traffic congestion and highway hazards and he warned that "the public is due for a rude awakening from the current highway program."

Put across, Mr. Kennedy said, that, as a means to reduce congestion, the highway program uses money, not in the cities where congestion occurs, but on intercity turnpikes. With truckers taking over these roads for their own use, he added, "the ordinary motorist will again be driven from the highways while fast, safe, comfortable and convenient passenger train service comes back into its own."

Government Clouds Picture—However, he warned, the picture is not all rosy for the railroads' future, largely because of "consistently inconsistent" government policies.

As an example, Mr. Kennedy said "literally hundreds of passenger trains hve been pulled off and their equipment junked and thus lost forever to the defense plant because the mail has been taken away and awarded to the trucks." Even worse, he declared, is the Post Office's two-year-old three-cent-mail-by-air "experiment."

Mr. Kennedy called attention to expenditures for airports and air facilities which "are supposed to be justified as a means of promoting a new and useful industry." But, he pointed out, passenger revenues for airlines in 1954 exceeded railroad passenger revenues, $906 million to $767 million.

"Certainly," he declared, "the air carriers have come of age and should now be relied on to stand on their own two feet. Yet, states and municipalities join with the federal government in racing to extend the use of airports and navigation services provided by taxpayers (including railroads) with no serious effort to obtain adequate or fair return or rental."

Industry Solidarity—The brotherhood spokesman said his invitation to address the dinner indicated "the changing nature of problems with which we are faced." He commented that historically "the problems on the railroads have been largely those within the industry" in which labor and management were "pitted against each other."

Now, he said, there is "a growing importance, an increased urgency, in problems which bear directly upon the welfare and future of the entire railroad industry where management, employees and suppliers are all affected alike and in the same way."

At the same time, he said his presence reflected "confidence in both the ability and the responsibility of labor to function as a full partner in the solution of industry-wide problems."

Assailing the multiple role of government as promoter, shipper, regulator and provider of facilities in the transport industry, Mr. Kennedy warned that "so long as the government refuses to coordinate the several phases of its own interest . . . there will be confusion, inconsistency and economic waste." He said the government has made the "fundamental mistake" of failing to treat the transport industry as an entity, and he suggested that every action by the government in the field be "fully and intelligently evaluated to determine its consistency with our transportation policy and its real effect upon the entire transportation system."

Buckets of Bunk.—He singled out again the road-building program claiming that the government is delving into the business of providing and selling transportation facilities directly in competition with railroads. He noted that "great buckets of bunk" about the importance of the highway system to national defense have been "peddled" while the role of railroads has been ignored.

(Continued on page 10)

RAILWAY MARKET OUTLOOK THIS WEEK

a RAILWAY AGE Workbook Page

Carloadings Down.—Loadings of revenue freight in the week ended March 17 totaled 685,985 cars, the Association of American Railroads announced on March 22. This was a decrease of 11,616 cars, or 1.7%, compared with the previous week; an increase of 35,061 cars, or 5.4%, compared with the corresponding week last year; and an increase of 76,026 cars, or 12.5%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended March 10 totaled 697,601 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS
For the week ended Saturday, March 10

District	1956	1955	1954
Eastern	119,127	115,229	108,087
Alleghany	140,749	125,049	115,287
Pocahontas	60,041	50,891	42,901
Southern	133,003	129,313	119,950
Northwestern	72,470	72,119	69,158
Central Western	114,681	112,863	100,743
Southwestern	57,530	56,819	53,811
Total Western Districts	244,681	241,801	223,712
Total All Roads	697,601	662,283	609,937
Commodities:			
Grain and grain products	45,172	43,640	43,679
Livestock	6,877	6,616	6,591
Coal	128,663	112,887	98,999
Coke	13,334	10,565	8,572
Forest Products	45,150	43,823	40,406
Ore	22,334	15,745	14,162
Merchandise l.c.l.	63,392	64,466	65,193
Miscellaneous	372,679	364,541	332,335
March 10	697,601	662,283	609,937
March 3	710,996	653,575	590,576
February 25	687,018	631,072	595,031
February 18	698,319	650,248	618,623
February 11	684,328	638,788	623,706
Cumulative total, 10 weeks	6,872,024	6,376,397	6,151,764

In Canada.—Carloadings for the seven-day period ended March 7 toaled 77,607 cars, compared with 91,018 cars for the previous eight-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
March 7, 1956	77,607	35,438
March 7, 1955	66,983	32,208
Cumulative Totals:		
March 7, 1956	718,630	329,135
March 7, 1955	620,721	289,266

Lightweight Trains

► *Rock Island.*—Plans are under consideration to buy another lightweight train, for service between Minneapolis-St. Paul and Houston, by late 1957 or early 1958; type is still undecided and is said to depend on best design to come out of current lightweight train race; the 1,300-mi run would undoubtedly require sleeping accommodations.

New Equipment

FREIGHT CARS

► *February Orders and Deliveries.*—Orders declined to 1,675 in February, compared with 1,818 in January, the ARCI and AAR report; February 1955 orders totaled 2,690; deliveries rose to 4,881, compared with 4,199 in January and 2,422 in February 1955; March 1 backlog was 141,437 cars, compared with 144,946 on February 1 and 18,663 on March 1, 1955.

Type	Ordered Feb. '56	Delivered Feb. '56	On Order Mar. 1, '56
Box—Plain	65	1,636	57,991
Box—Auto	0	0	2,900
Flat	50	273	5,692
Gondola	321	2	12,893
Hopper	315	1,273	41,760
Covered Hopper	90	727	5,505
Refrigerator	35	157	5,136
Stock	0	142	114
Tank	799	553	7,727
Caboose	0	10	256
Other	0	108	1,463
TOTAL	1,675	4,881	141,437
Car Builders	1,441	3,152	66,071
Company Shops	234	1,729	75,366

► *Texas & Pacific.*—Ordered 65 box cars, 35 "DF" refrigerator cars, 100 70-ton gondola cars and 30 70-ton covered hopper cars to be built in T&P's Marshall, Tex., shops next year.

PASSENGER CARS

► *Canadian Pacific.*—Ordered two additional rail diesel cars (RDC-1's), Budd Company.

LOCOMOTIVES

► *Pennsylvania.*—Ordered 79 all-purpose diesel-electric units costing approximately $16,500,000; deliveries to begin next June; Electro-Motive will guild 55 1,750-hp units; Alco Products, nine 1,800-hp and six 2,400-hp units; Fairbanks, Morse, nine 2,400-hp units; when deliveries are completed, PRR will have 2,134 diesel units totaling 2,997,820 hp.

SPECIAL

► *Santa Fe.*—Ordered three baggage-mail cars and three railway post office cars, ACF Industries; deliveries scheduled to start this month.

Mr. Kennedy warned that "if we are to avoid nationalizing our transportation system the federal government must assume primary responsibility to see to it that the privilege of road use is not sold at less than cost."

Transport regulation as exercised by the government is of such a "fragmentary character," the labor spokesman went on, that it really affects only the railroads. He recommended that the system be overhauled to make it apply completely or that "it should be repealed," urging in this connection, that Congress should take action in this session on the Cabinet Report legislation now before it.

NYC to Revamp Freight Yard Facilities

Over $25 million will be spent to overhaul yards at Buffalo, Youngstown and Elkhart; comparable projects contemplated for other freight facilities

The New York Central last week disclosed plans for revamping and streamlining freight yard facilities throughout its entire system.

NYC President Alfred E. Perlman said the railroad plans to spend more than $25,000,000 to overhaul three major freight yards, at Buffalo, N.Y., Youngstown, Ohio, and Elkhart, Ind.

Comparable projects are contemplated for other existing freight facilities as part of the railroad's long-range modernization program.

Still Under Study—The Youngstown and Elkhart projects are still under study. Construction of the new $10,559,000 electronically controlled Buffalo classification yard is scheduled to begin within the next two or three weeks.

The Buffalo project is expected to pay for itself in less than two years, Mr. Perlman pointed out, noting that salvage operations will defray the cost of new construction by an estimated $4,454,000, reducing net cost of the project to $6,105,000.

The sweeping overhaul of freight facilities in Buffalo and nearby Gardenville will slash operating expenses by nearly $4½ million every year, and will save shippers an estimated 225,000 car-days a year, Mr. Perlman predicted.

Increased efficiency of operation will also permit the railroad to release more than ten locomotives for other duty, he said.

Other Benefits—Additional advantages to be gained from retirement of unnecessary and outmoded equipment will be: Freeing approximately 300 acres of real estate for industrial development; important savings in maintenance costs; and cutting by two-thirds the present time on freight car handling.

At present, freight car handling averages 25 hours, 40 minutes in East Buffalo, and 21 hours, 10 minutes in Gardenville. Estimated average time for movement through the new yard is 7 hours, 55 minutes.

Essentially, the "push-button" freight yard will facilitate servicing and through-operation of cars by setting up a complete modern switching system to allow final classification of cars in one switching operation.

Peak Utilization—Concentration of operations within a relatively small area will permit peak utilization of yard engines and road power.

Included in the overall yard plan are provisions for a 250-car-capacity car cleaning yard; an 85-car-capacity car repair facility equipped for all-day operation; a 60-pen stock yard; and facilities for inspecting and servicing all engines assigned in the Buffalo district.

Mr. Perlman said the decision to proceed with the project was based upon an intensive analysis of the needs of shippers utilizing Buffalo freight yard facilities.

Detailed announcement of projects in other areas will be made as soon as studies now being conducted are completed and recommendations are approved.

SP Wins Top Honors in Outdoor Advertising

Burton Cherry (right), president of the Art Directors Club of Chicago, presents the gold medal award of the National Competition of Outdoor Advertising Art to William F. Coyne, passenger traffic and public relations manager of the Southern Pacific in Chicago. The SP's "next time try the train" highway bulletin designs have received the award six times in recent years. The winning boards were used for six months during last year and were designed by the SP's advertising agency, Foote, Cone & Belding.

PRR Car Building Work Slowed by Steel Shortage

Steel shortages have slowed car building operations at the Pennsylvania's Altoona, Pa., shops, forcing the layoff of many employees and a delay in the road's programs for construction of box cars, gondola cars and flat cars.

A PRR spokesman said 250 Altoona employees had been absorbed by expanding hopper-car repair projects at the nearby Samuel Rea shops in Hollidaysburg. He pointed out that, because of uncertainty in the steel production situation, there could be no accurate estimate as to how long the Altoona programs would be affected.

ICC Bans Slow-Motion Railroading by April 9

The Interstate Commerce Commission has ordered railroads to discontinue practices which "willfully delay the movement of loaded freight cars" for the purpose of increasing their time in transit. The directive came in Service Order No. 910, which will become effective at 12:01 a.m. April 9 and remain in effect through December 31, unless otherwise modified.

The basis for the order is "an acute shortage of freight cars," which the commission considered an "emergency requiring immediate action to promote car service in the interest of the public and the commerce of the people." While the order applies to delaying tactics with respect to all carload freight, it is understood that the commission's main purpose was to end slow movements of lumber.

Requirements—The order's general requirement is that there shall be no willful delays brought about by holding loaded cars in yards, terminals or sidings. It also has these requirements:

Loaded cars shall not be set out between terminals except in cases of emergencies or sound operating requirements.

Backhauling loaded cars for the purpose of increasing the time in transit shall constitute willful delay and is prohibited.

Through loaded cars shall not be handled on local or way freight trains for the purpose of increasing the time in transit of such loaded cars.

The use by any railroad, for the movement of loaded freight cars over its line, of any route other than its usual and customary fast freight route from point of receipt of the car from consignor or connecting line to point where delivered to consignee or connecting line, except in emergencies, or for the purpose of according a lawfully established transit privilege (not including a diversion or reconsignment privilege) is prohibited.

The order applies to both intrastate and interstate shipments. It suspends all tariff rules and regulations which conflict with its provisions.

Third Building for AAR Research Center

This ground breaking ceremony initiated construction of a new $500,000 addition to the Association of American Railroads Research Center on the campus of the Illinois Institute of Technology, Chicago. Left to right are J. T. Rettaliata, president of the institute; Richard G. May, vice-president in charge of the AAR's Operations and Maintenance Department; William M. Keller, AAR director of engineering and research; and Gerald M. Magee, AAR director of engineering research. The new building, designated as the engineering laboratory, will be the third on the Research Center grounds and is expected to be completed early next year.

Perlman Hits Across-Board Increases

Across-the-board freight rate increases are a risky business, because they afford truckers the chance to fix rates to win choice traffic, Alfred E. Perlman, New York Central president, told a recent meeting of the New York Railroad Club.

He called the Ex Parte 196 increase obtained by the railroads this month (Railway Age, Mar. 12, p. 8), "one of the most dangerous things that could happen."

Mr. Perlman, one of four eastern railroad presidents speaking at the "President's Night" meeting of the club, said "these across-the-board increases just mean that more and more high-rated commodities are going to the trucks."

He added, however, that railroads could not have waited a year and a half for rate increases to meet rising costs of services, supplies and labor.

Referring to charges that the Cen-

tral had improved its financial position by trimming maintenance expenditures, Mr. Perlman said the answer lies in the savings afforded by modern maintenance equipment. As an example, he cited the NYC's record of cutting its bad order car ratio from 13% to just over 3% during his administration and told of improved freight train performance and plans to combine eight yards at Buffalo in one electronic facility.

Other speakers at the meeting were Howard E. Simpson, president of the Baltimore & Ohio, who described the role of transportation in the American economy and said economic stability could be achieved only through industrial peace; Thomas M. Goodfellow, president, Long Island, who described operation under the New York Redevelopment Law and defended his road's increase in passenger fares last December as being necessary to avoid a "bad" disruption of its rehabilitation program; and George Alpert, president, New Haven, who described the events that led to his taking his present job in January when he found the New Haven hampered by, among other things, "shoddy power."

No "Umbrella" Protection for Truckers

It is lawful for railroads to reflect the "inherent advantage" of lower cost (where they have this advantage) in their rates, and thus hold traffic which otherwise might be diverted to a rival agency of transportation.

In other words, the railroads are not being required in this instance—as has sometimes occurred in the past—to hold a "rate umbrella" for the benefit of their competitors. Such is the finding of Division 2 of the ICC (Commissioners Freas, Winchell and Murphy) in a decision in I. & S. Docket No. 6451, "Compressors, Tecumseh, Mich., to Springfield, Mass."

Under proposed reduced rates which had been suspended, the railroads seek to establish a commodity rate of 109 cents (not subject to the Ex Parte 175 increase), on refrigerator compressors or pumps from Tecumseh, Mich., to Springfield, Mass. (carload minimum 36,000 lb). Suspension came after protest by the Eastern Central Motor Carriers. The Westinghouse Electric Company intervened in support of the respondent railroads.

Present railroad rates (i.e., those of August 1955, when the proposed rates were suspended), are 144.9 cents by rail and 145 cents by truck, both with 24,000-lb minima. Average loading per car has been 34,488 lb. The short-line railroad distance is 681 miles. Hence, existing rates have been yielding 73.38 cents a car-mile. The proposed rate of 109 cents would yield 57.62 cents a car-mile for the 36,000-lb minimum weight, and 3.201 cents per ton-mile. Average revenue per car-mile of Eastern District railroads in 1954 was 51.21 cents, and average costs per car-mile were 37.23 cents—so the proposed new rates would be above both railroad costs and average railroad car-mile earnings.

The protesting motor carriers argued that the proposed railroad rates "would preclude motor carriers from participating in the traffic in the future, pointing out that motor transportation costs are in excess of similar rail costs." Division 2 said:

"The provision of the national transportation policy relating to preservation of the inherent advantages of each mode of transportation does not require that the transportation agency having the inherent advantage must maintain its rates at a level which will enable other forms to compete successfully.

"In *ICC vs. Mechling*, 330 U.S. 567, 579-580, the Supreme Court said, in discussing the inherent advantages of barge vis-a-vis rail cost, that Congress 'has declared in unmistakable terms that the inherent advantage of the lower cost of barge carriage as compared with that of railroads must be passed on to those who ship by barge' and that Congress wanted the shippers 'to get full benefit' of barge line rates.

"This pronouncement has application also to situations where rail carriers providing the low-cost transportation are willing to establish rates which in the exercise of their lawful managerial discretion are substantially profitable even though the same rates may not be profitable for transportation by motor carriers."

On the "Forum" page in this issue (page 21), a proposed report by ICC Examiner Mohundro, wherein the application of an opposing doctrine in a competitive' rate case is recommended, is discussed. In that case, Examiner Mohundro would deny to the railroads authority to make rates which would be clearly profitable to them—on the ground that such rates would divert the traffic in question from a barge operation.

Senate Committee Raps ICC

The Senate's Small Business Committee thinks it should be easier than it now is to get into the trucking business.

The committee, headed by Senator Sparkman, Democrat of Alabama, has issued a report criticizing the Interstate Commerce Commission's administration of the Motor Carrier Act. The report resulted from public hearings which the committee held last November and December.

Minority View—A minority view was filed by one of the committee's members—Senator Schoeppel, Republican of Kansas. Basically, he said, the committee report "disagrees with the present policy of Congress which requires proof of public convenience and necessity before a certificate can be granted by the commission to a common carrier by motor vehicle."

One of the committee's recommendations calls for a Motor Carrier Act amendment which would direct the commission to issue a certificate if it found that an applicant is "fit, willing, and able properly to perform the service proposed." A showing of public convenience and necessity would no longer be required.

Recommendations—Other recommendations include a call for enactment of legislation which would end the commission's authority to prohibit trip-leasing of trucks; and a proposal that the secretary of agriculture be given authority to determine what constitutes an agricultural commodity under the Motor Carrier Act's agricultural-exemption provisions.

It is also proposed that the Senate committees on Labor and Public Welfare and Interstate and Foreign Commerce "review an alleged 'trade-restraining role' of the International Brotherhood of Teamsters."

Meanwhile, the ICC is called upon to "remove the shackles it has tight-

ened around a large segment of the trucking industry"; to increase competition by a "substantial relaxation of route, commodity, back-haul, and numerous other restrictions"; to "cut red tape and avoid costly delays"; and to go in for "more sympathetic reliance on the forces of free enterprise as a natural regulator of competition."

No basic study—In his separate statement, Senator Schoeppel pointed out that these recommendations were made "despite the fact that the committee . . . did not attempt to investigate the proper place of trucking, railroads, water carriers, and other media in the complex scheme of national transportation policy." The committee, Mr. Schoeppel added, relied on statements of "very few motor carriers and two shippers . . . who are dissatisfied with decisions of the commission."

The majority report conceded that the investigation was not a comprehensive one. "The committee's only purpose," it said, "was to examine the validity of the many and bitter complaints received from small truckers and small shippers directed at the policies and practices of the Interstate Commerce Commission."

The "bill of particulars" drawn against the commission included these allegations:

1. It has "frozen the pattern of trucking operations so that entry into the trucking field by qualified small companies has become a virtual impossibility."
2. It has forced small companies with "bona fide" grandfather rights "to yield some of those rights to their own economic detriment and to the calculated agrandizement of larger competing truck firms."
3. It has "arbitrarily" denied to "qualified" smaller companies "both new authority and economically logical extensions of their present route and commodity authority."
4. It has "discriminated against smaller truckers by denying them alternate routes which are most economical from an operating point of view."
5. Its policies of "forcing many truckers to return from their outbound point of delivery without a back-haul payload places a discriminatory and uneconomic burden on small truckers."
6. Its "progressively restrictive interpretations of agricultural exemptions has worked a great hardship on companies which primarily haul farm produce."
7. It has imposed "unduly restrictive" regulations on trip-leasing of trucks.
8. It has sanctioned mergers which have placed smaller truckers "at an increasing disadvantage."
9. It has not been solicitous of the needs of small truckers and small shippers when such needs "conflict with the apparent interests of large shippers or the railroads."
10. Its procedures involve "so much red tape, time, and expenditure of money, that smaller truckers are often crushed by the sheer weight of its bureaucratic mechanisms."
11. Its determinations as to public convenience and necessity "almost invariably coincide with the interests of the largest truckers and the railroads."

Report on Los Angeles Derailment

Big car windows may have been a factor in the 152 casualties which resulted from the January 22 derailment on the Santa Fe at Redondo Junction in Los Angeles, Cal.

That is implied in the Interstate Commerce Commission's report on its investigation of the accident which involved a train consisting of two diesel-powered cars coupled in multiple-unit control. After noting that there were "no structural defects in the equipment," and that the bodies of the cars "were not broken open in such manner as to have contributed to the number of casualties," the commission's report went on to say:

"However, with the exception of two windows on the left side of the first unit, all windows on the left sides of both units were found to have been broken out. It is evident that the unusually large number of casualties . . . was due to persons falling or being pulled through the openings where the 25½-in. by 53¾-in. windows had been displaced, and coming into contact with parts of the track structure while the derailed units were sliding on their sides."

The sliding continued for about 500 ft. The commission concluded that the derailment overturned the cars immediately, and it reported

(Continued on page 38)

Freedoms Foundation Awards Are Presented

For "an outstanding achievement in bringing about a better understanding of the American way of life during 1955" through its convocations in Negro colleges and universities, the Association of American Railroads has been awarded an honor certificate from Freedoms Foundation. Albert R. Beatty (above, right), AAR assistant vice-president, accepts the certificate from Dr. Kenneth D. Wells, president of the foundation, in the old Supreme Court chambers, Washington, D. C. The Texas & Pacific, for the sixth consecutive year, also was given an honor medal by the foundation for its institutional advertising. The most recent award was presented for the T&P advertisement called "The Good Book is still Good for Americans." The advisement was the seventh in a series about "Our Four Great Faiths."

Announcing a new line

New standards of performance . . .
New standards in long service life

ALCO's constant research and engineering for better, more versatile motive power has resulted in a completely new line of road switchers: the DL 701, DL 702 and DL 600.

The new units have incorporated all the most recent developments in locomotive design.

For its new locomotives, ALCO engineers developed a new diesel engine—the Model 251—using all the best of proved engine features.

Every part . . . every component . . . every assembly of the 251 engine was designed from the ground up. The new design has been subject to almost three years of laboratory testing and two years of road service. Its performance has been outstanding.

As a result, the new, proven 251, together with new simplified controls and generator, sets new standards of continuous and short-time performance, in long-life service and in lower maintenance.

With unprecedented power and versatility, ALCO's new road switchers can haul more tons per train in fast freight and passenger runs than ever before . . . handle branch line and switching assignments with greater earning power.

We invite you to talk with your nearby ALCO representative for full information on this new, fully tested motive power development.

ALCO **ALCO PRODUCTS, INC.**
New York
SALES OFFICES IN PRINCIPAL CITIES

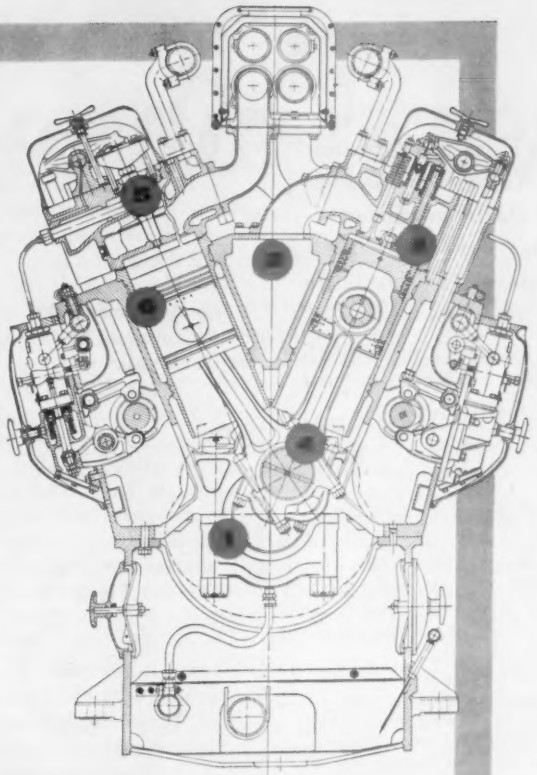
# of ALCO Road Switchers

Some of the New Proven Features of the ALCO

251 DIESEL ENGINE

1. **NEW** saddle-cap design — serrated to eliminate fretting under shear loads. Obviates chance of misalignment during reassembly.
2. **NEW** aftercooler—lowers turbocharger, manifold, piston and cylinder temperatures.
3. **NEW** replaceable valve seat inserts — give maximum cylinder head life.
4. **NEW** bearing design—wider grooveless center main bearing increases oil-film thickness 150 per cent. Partially grooved connecting-rod bearing increases thickness 100 per cent. All bearings more rigid.
5. **NEW** fuel-injection equipment — provides better combustion, more economy.
6. **NEW** Ni-Resist insert piston and heat-treated piston rings—give maximum piston, ring and liner life.

ALCO also produces freight "A" and "B" units, passenger "A" and "B" units, and switchers with the new Model 251 diesel engine.



ALCO DL 702—
1800-hp, 6-motor
Road Switcher

ALCO DL 600—
2400-hp, 6-motor
Road Switcher

Questions and Answers

Of current interest | *to the Transportation Department*

In June 1954 a committee of the American Association of Railroad Superintendents recommended elevation of the outside rail of turnouts as an aid in increasing switching efficiency. What do you think of this idea . . .

?

Don't forget to send in your answers to the Car Service "quiz" which ran in the March 12 issue. It's easy. Names of all who submit correct answers will be published in Railway Age.—*G.C.R.*

CONDUCTED By G. C. RANDALL, district manager, Car Service Division (ret.), Association of American Railroads, this column runs in alternate weekly issues of this paper, and is devoted to authoritative answers to questions on transportation department matters. Questions on subjects concerning other departments will not be considered, unless they have a direct bearing on transportation functions. Readers are invited to submit questions, and, when so inclined, letters agreeing or disagreeing with our answers. Communications should be addressed to Question and Answer Editor, Railway Age, 30 Church Street, New York 7.

One "yes" vote.

The basis of this recommendation was the following letter from one of the members of the committee making the proposal:

"The outside rail of switching leads [should] be maintained one and one-half inches higher than the inside rail.

"It was thought that the ideal lead for so-called flat switching should have, in the switching direction, descending grades as follows: straight lead, two-tenths of one per cent; from switch points through turnouts, four-tenths of one per cent; on the classification tracks, from a few feet beyond the frog for a distance of about 75 feet, one per cent; from this point, for whatever distance it is desired to have the cars roll, two-tenths of one per cent.

"These conclusions resulted from consideration of the following:

"1. That a two-tenths of one per cent decline produces a non-accelerating grade for loaded freight cars;

"2. That some means should be provided to compensate for the curve resistance through the turnout;

"3. That some means should be provided to prevent cars from stopping foul of the lead;

"4. That some means should be provided to carry the cars along on the classification tracks thereby obviating frequent shoving of cars on these tracks.

"The theory prompting the conclusions is that a heavy load cut off while moving at any stated speed will continue at the same speed on the straight two-tenths of one per cent lead to the desired turnout, even though it be the farthest turnout on the lead. The additional two-tenths of one percent in the turnout, secured by maintaining the outside lead rail one and one-half inches higher than the inside lead rail, will partially compensate for the curve resistance of the turnout. The short one per cent decline, on the classification tracks just beyond the frog, will prevent stopping of cars foul of the lead and will restore momentum lost in movement through the turnout.

"The object of the plan is to employ gravity in so-called flat switching to the greatest practical extent. All cars are not loads, but loads are most important and therefore it is essentially necessary that the lead be designed to provide the best possible handling of loads. Light loads and empties must, of course, be cut off at higher speeds. However, with such a lead, switchmen will soon become proficient in gaging the speed requirements.

"Some will contend that a higher outside rail will not be helpful in rolling cars off a lead. This is tantamount to saying that a higher inside rail will not retard cars through a lead turnout. An actual operating comparison between a switching lead with outside rail one and one-half inches high and one with no elevation will, I am sure, dispel any skepticism that might have been entertained concerning the advantages of a high outside lead rail.

"Experience with a lead exemplifying the foregoing theory was most gratifying. Cornering the cars, which previously had been recurring with exasperating frequency, was practically eliminated; damage to equipment and lading decreased; and, despite the fact that cars were moved more slowly on the lead, the number of cars switched per hour increased due to reducing time lost waiting for cars to clear the lead, in shoving the cars on classification tracks to provide additional space, and in reverse movements necessitated by hard kicking and running over switches. No increase in derailments of motive power or of cars was noted."—*R. O. Jensen, terminal superintendent, Soo Line.*

announcing.....NEW...ALL NEW

TRANSISTORIZED

UNPRECEDENTED PORTABLE PERFORMANCE THROUGH TRANSISTORIZED CIRCUITRY

Handie-Talkie®

PORTABLE RADIOPHONES

THE ANSWER TO COMMUNICATION WITH THE "MAN ON THE GROUND"—CAR CHECKING, CAR INSPECTION, MAINTENANCE OF WAY.

HIGHEST RF POWER... New HANDIE-TALKIE radiophones are the *most powerful* portables ever built—up to 20 times greater power output gives you greatly extended coverage and clearer messages.

LOWEST OPERATING COST... Battery life and reliability is significantly improved. Dry battery replacement costs reduced by as much as 67%. Nickle-Cadmium storage batteries are lifetime rechargeable. Every component conservatively operated for longest life—top-notch performance Transmitter "I.D.C." Instantaneous Deviation Control and receiver "PERMAKAY" filter plus modular construction make these new portables obsolescence-free.

MAXIMUM PORTABILITY... Featuring transistors, exclusive PLA-cir plated chassis and all-aluminum housings, the HANDIE-TALKIE radiophone is smaller and lighter than ever—as much as 50% reduction in weight and size.

OPTIMUM SERVICEABILITY... New "swing-out" chassis design exposes all parts in *seconds* for fast, simplified servicing or alignment. "Snap-on" interchangeable power packs speed routine maintenance, permit rapid battery renewal.

Motorola, Handie-Talkie, PLA-cir, and Permakay are all registered trademarks of Motorola, Inc.

Write today!

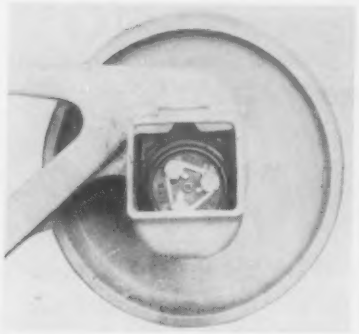
Get the full facts in this colorful 6 page folder.

RA

MOTOROLA

Communications & Electronics, Inc.
A Subsidiary of Motorola, Inc.
4501 Augusta Blvd., Chicago 51, Illinois
Rogers Majestic Electronics Ltd., Toronto, Canada

WHAT'S NEW in Products



Wedge fitting around the bearing housing allows application to the integral box side frame or to the narrow pedestal side frame.

Adapter allows the bearing to be applied to the wide pedestal side frame. Lubrication on three-year basis is recommended.

ROLLER BEARING PACKAGE

The Hy-Roll roller bearing is a package designed to fit all standard AAR freight car truck side frames. With adapters or wedges, the box may be applied either to the pedestal or integral housing type side frames. The integral box type requires some modification before the application can be made.

Combined radial and thrust loads are carried by two rows of cylindrical rollers. Thrust loads are absorbed by the external flanges of the inner races and the internal flange of the outer race or housing which contact the opposite ends of the rollers. There are two identical single-flange type inner races in each assembly. The two rows of cylindrical rollers operate directly on the hardened and ground housing or outer race.

The locking cap serves the dual role of retaining the bearing assembly in its proper position on the axle and providing a smooth surface for the seal at the front end of the bearing. The dust guard positions the inner races on the axle and gives a seal seat at the inner end. Both have flanges to protect the multiple-lipped seals. These lips are designed to make very light contact with the sealing surfaces to lengthen life and minimize wear.

The bearing is made in 5 by 9, 5½ by 10, 6 by 11, and 6½ by 12-in. sizes. *Hyatt Bearings Division, General Motors Corporation, Dept. RA, Harrison, N. J.*•

Components of the roller bearing assembly. Locking cap at the right is retained on the end of the axle by three cap screws. Next to the left is the outer grease seal that fits into the bearing housing which conains the inner races, rollers, separators and spacer. The inner grease seal fits at the left end of the housing and rides on the dust guard at the far left. Bearing must be applied to the axle by using a wheel press, or with a special jack supplied by the manufacturer.

TANK CAR FINISH

A synthetic rubber resin base paint which is resistant to chemicals has been used in refinishing tank cars hauling high alkali solutions. The finish is based on Goodyear Pliolite S-5 and is said to resist high acid and salt exposure, and protect against dust and sand particle abrasion. First step in applying the paint is wire brushing to remove loose scale and rust. Surfaces are treated with Gay-Lux metal etcher and cleaner, a phosphoric acid solution containing wetting agents. The cars are water rinsed, leaving a thin phosphate coating on the metal surfaces. A primer surfacer is then sprayed on the car. It contains sufficient zinc chromate to afford anticorrosion properties. The finish coats containing the Pliolite S-5 are applied by spraying. *Kanarterx Coatings, Inc., Dept. RA, Galesburg, Ill.*•

METAL CLEANER

Lix Solvene No. 512 is an all-purpose cleaner for removing petroleum residue, asphalts, etc., from ferrous and nonferrous metals. It is said to be non-corrosive, non-toxic and nonflammable and not to attack painted surfaces. No caustic compounds of any sort are present and the pH is less than 9.

The product is diluted with water to form an emulsion, or it may be diluted with mineral spirits.

Best results are attained at room temperature. *Lix Corporation, Dept. RA, 716 East 85th Street, Kansas City, Mo.*•

COACH HEATERS

In one of the side compartments under each of the ten passenger cars in both GM "Aerotrains" is a Vapor automatic oil-fired hot water heater No. 4915. Thermostat controls cause the heaters to turn on and off as needed to supply additional heat whenever heat supplied by the electric immersion heaters in the liquid heating system in the cars is inadequate.

These automatic Vapor hot water heaters put out from 125,000 to 150,000 Btu per hour. They were developed to keep the diesel engines warm during non-operating hours.

These heaters have a high output, yet are compact enough to fit into small compartments. The forced-draft fire burns in an Inconel firepot. A fuel pump, forced draft motor and all the automatic controls are incorporated in this small package. *Vapor Heating Corporation, Dept. RA, 6240 West Howard St., Chicago 31.*

PUT YOURSELF IN THIS PICTURE AND ASK—

"... just what can we do to prevent damage here?"

"That's easy—switch to the National MF-400 Rubber-Cushioned Draft Gear. It fits both standard pocket and yoke."

"Yes, I know that. But what does it have to offer over friction gears?"

"Well, first of all, tests prove that most coupling is performed at 7 to 8 mph—not at 4 to 5 mph. And at today's higher speeds, friction gears simply don't have it . . ."

"In what respects?"

"I don't want to sound too technical but here's why. The impact quantum is the amount of work that must be done in any impact. Purpose of the rubber cushioning is to permit this work to be done with a minimum of force transmitted to the car. This reduction in force is performed by the *extra-long travel* and *high cushioning capacity* of National Rubber Draft Gears."

"Longer travel makes lots of sense to me. Do you have any test figures on capacity of your National Rubber Draft Gear?"

"We certainly do. We measure and record forces on modern *electronic* instrumentation installed in cars on test tracks at our new Technical Center. That gives National *duplicated*—not laboratory simulated—operating conditions . . ."

"Now you're talking. Let's go into my office and go over actual figures . . ."

AA-2970

National Rubber-Cushioned Draft Gears give you protection when you need it—at high impact speeds!

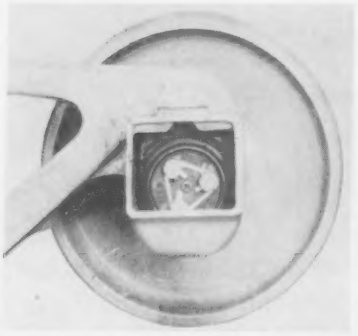
NATIONAL MALLEABLE and STEEL **CASTINGS COMPANY**

Cleveland 6, Ohio

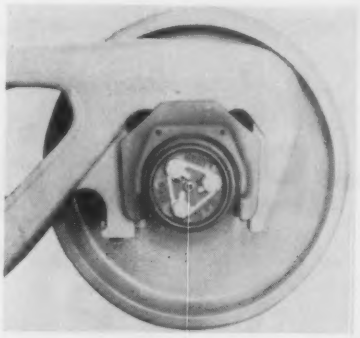
COUPLERS • YOKES • DRAFT GEARS • FREIGHT TRUCKS • SNUBBER PACKAGES • JOURNAL BOXES and LIDS

PUT YOURSELF IN THIS PICTURE AND ASK—

WHAT'S NEW in Products



Wedge fitting around the bearing housing allows application to the integral box side frame or to the narrow pedestal side frame.



Adapter allows the bearing to be applied to the wide pedestal side frame. Lubrication on three-year basis is recommended.

ROLLER BEARING PACKAGE

The Hy-Roll roller bearing is a package designed to fit all standard AAR freight car truck side frames. With adapters or wedges, the box may be applied either to the pedestal or integral housing type side frames. The integral box type requires some modification before the application can be made.

Combined radial and thrust loads are carried by two rows of cylindrical rollers. Thrust loads are absorbed by the external flanges of the inner races and the internal flange of the outer race or housing which contact the opposite ends of the rollers. There are two identical single-flange type inner races in each assembly. The two rows of cylindrical rollers operate directly on the hardened and ground housing or outer race.

The locking cap serves the dual role of retaining the bearing assembly in its proper position on the axle and providing a smooth surface for the seal at the front end of the bearing. The dust guard positions the inner races on the axle and gives a seal seat at the inner end. Both have flanges to protect the multiple-lipped seals. These lips are designed to make very light contact with the sealing surfaces to lengthen life and minimize wear.

The bearing is made in 5 by 9, 5½ by 10, 6 by 11, and 6½ by 12-in. sizes. *Hyatt Bearings Division, General Motors Corporation, Dept. RA, Harrison, N. J.*•

Components of the roller bearing assembly. Locking cap at the right is retained on the end of the axle by three cap screws. Next to the left is the outer grease seal that fits into the bearing housing which conains the inner races, rollers, separators and spacer. The inner grease seal fits at the left end of the housing and rides on the dust guard at the far left. Bearing must be applied to the axle by using a wheel press, or with a special jack supplied by the manufacturer.

TANK CAR FINISH

A synthetic rubber resin base paint which is resistant to chemicals has been used in refinishing tank cars hauling high alkali solutions. The finish is based on Goodyear Pliolite S-5 and is said to resist high acid and salt exposure, and protect against dust and sand particle abrasion. First step in applying the paint is wire brushing to remove loose scale and rust. Surfaces are treated with Gay-Lux metal etcher and cleaner, a phosphoric acid solution containing wetting agents. The cars are water rinsed, leaving a thin phosphate coating on the metal surfaces. A primer surfacer is then sprayed on the car. It contains sufficient zinc chromate to afford anticorrosion properties. The finish coats containing the Pliolite S-5 are applied by spraying. *Kanarterx Coatings, Inc., Dept. RA, Galesburg, Ill.*•

METAL CLEANER

Lix Solvene No. 512 is an all-purpose cleaner for removing petroleum residue, asphalts, etc., from ferrous and nonferrous metals. It is said to be non-corrosive, non-toxic and nonflammable and not to attack painted surfaces. No caustic compounds of any sort are present and the pH is less than 9.

The product is diluted with water to form an emulsion, or it may be diluted with mineral spirits.

Best results are attained at room temperature. *Lix Corporation, Dept. RA, 716 East 85th Street, Kansas City, Mo.*•

COACH HEATERS

In one of the side compartments under each of the ten passenger cars in both GM "Aerotrains" is a Vapor automatic oil-fired hot water heater No. 4915. Thermostat controls cause the heaters to turn on and off as needed to supply additional heat whenever heat supplied by the electric immersion heaters in the liquid heating system in the cars is inadequate.

These automatic Vapor hot water heaters put out from 125,000 to 150,000 Btu per hour. They were developed to keep the diesel engines warm during non-operating hours.

These heaters have a high output, yet are compact enough to fit into small compartments. The forced-draft fire burns in an Inconel firepot. A fuel pump, forced draft motor and all the automatic controls are incorporated in this small package. *Vapor Heating Corporation, Dept. RA, 6240 West Howard St., Chicago 31.*

PUT YOURSELF IN THIS PICTURE AND ASK—

"... just what can we do to prevent damage here?"

"That's easy—switch to the National MF-400 Rubber-Cushioned Draft Gear. It fits both standard pocket and yoke."

"Yes, I know that. But what does it have to offer over friction gears?"

"Well, first of all, tests prove that most coupling is performed at 7 to 8 mph—not at 4 to 5 mph. And at today's higher speeds, friction gears simply don't have it . . ."

"In what respects?"

"I don't want to sound too technical but here's why. The impact quantum is the amount of work that must be done in any impact. Purpose of the rubber cushioning is to permit this work to be done with a minimum of force transmitted to the car. This reduction in force is performed by the *extra-long travel* and *high cushioning capacity* of National Rubber Draft Gears."

"Longer travel makes lots of sense to me. Do you have any test figures on capacity of your National Rubber Draft Gear?"

"We certainly do. We measure and record forces on modern *electronic* instrumentation installed in cars on test tracks at our new Technical Center. That gives National *duplicated*—not laboratory simulated—operating conditions . . ."

"Now you're talking. Let's go into my office and go over actual figures . . ."

AA-281

National Rubber-Cushioned Draft Gears give you protection when you need it—at high impact speeds!

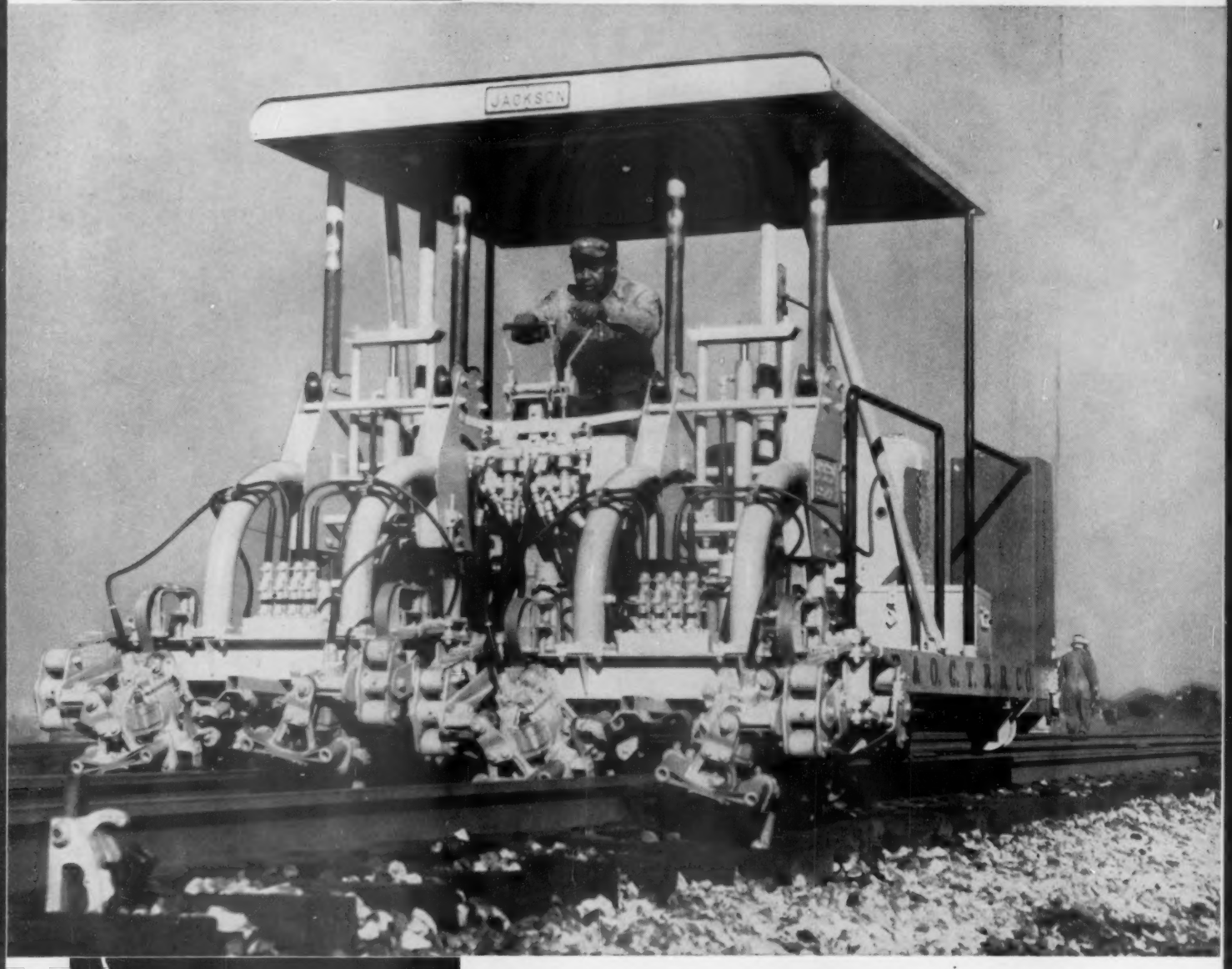
NATIONAL MALLEABLE and STEEL **CASTINGS COMPANY**

Cleveland 6, Ohio

COUPLERS • YOKES • DRAFT GEARS • FREIGHT TRUCKS • SNUBBER PACKAGES • JOURNAL BOXES and LIDS

IF THIS IS YOUR OBJECTIVE:

THE ON-TRACK-TAMPING MACHINE WITH
THE GREATEST ABILITY TO BOTH PUT UP AND
MAINTAIN FINEST TRACK *UNDER ALL CONDITIONS*



AQUIREMENT
PLANS TO
SUIT YOUR NEEDS

YOU'LL KNOW YOU HAVE ARRIVED
WHEN YOU LEARN WHAT THIS MACHINE
IS DOING IN ALL PARTS OF THE COUNTRY.
LET US GIVE YOU THE COMPLETE
FACTS CONCERNING THE

JACKSON TRACK MAINTAINER

INVARIABLY FIRST CHOICE OF THOSE WHO COMPARE

JACKSON VIBRATORS, INC. LUDINGTON, MICHIGAN

The Case of the One-Sided Umbrella

ICC Examiner O. L. Mohundro has come out with a "proposed report" that is a classic specimen of the "umbrella" theory of railroad rate regulation. This is the theory which, when it is applied, forces railroads to maintain rates substantially above cost of rail movement — solely for the purpose of diverting traffic away from the railroads and turning it over to some rival and higher-cost agency of transportation.

This umbrella approach is not a program applicable equally and alike to all forms of transportation. It is, in its practical effect, exclusively an *anti-railroad* device. This follows because 65 per cent of truck traffic and 95 per cent of waterway traffic are not subject to regulation. Hence, while regulators can hold an umbrella over truck and waterway operators to prevent the railroads from competing with them, they have no reciprocal power to extend effective umbrella protection to the railroads.

Whenever the umbrella theory is invoked, the end result is invariably a situation of "heads the railroads lose, tails their competitors win."

These observations are not intended to reflect adversely on the intelligence or integrity of Examiner Mohundro. He has undoubtedly written his report to conform with his belief of what the law requires. It may be that his opinion will be sustained, as the law of the land. If so, then the law will have to be changed to conform to contemporary economic reality.

In this particular case the railroads are seeking to establish an all-rail rate of $18.06 per long ton on iron and steel billets in carloads (50 tons minimum) from Louisville and Steelton, Ky., and Cincinnati, Ohio, to New Bedford, Mass. The proposed rate would produce earnings of $806 a car — which is *more* per car than higher existing rates with a 28-ton carload minimum can earn. The proposed rate would, by the shortest route, yield 64.6 cents per car-mile — which is far above average car-mile earnings in the territory and is practically double the average car-mile expense.

Making Costs Higher for Shippers

The sole reason for forbidding the railroads to offer the proposed rate is the likelihood that the barge carrier now handling this traffic from Ohio river points to Pittsburgh (on a truck-barge-rail combination) will lose this particular part of his business if the proposed all-rail rate is permitted. Examiner Mohundro believes the law requires the ICC to bring out its umbrella to prevent this from happening.

There is not available here the space in which to examine the legal background of this case. Mr. Mohundro relies heavily on what he believes the intent of Conress was at the time when various regulatory statutes were enacted. There is no doubt that, on more than one occasion in the past, Congress sought to legislate to prevent railroads from reducing rates to "destroy" competition — restoring higher rates after "destruction" had been accomplished.

Do Barges Need Nursing?

Whatever may have been the need of river carriers for regulatory protection in the past, it is quite evident that circumstances have changed. The typical river carrier of a generation or more ago was a genuine "little fellow." Possibly he then needed some protection from the "railroad monopoly." His was a precarious business carried on in shallow-draft vessels, powered by inefficient reciprocating steam engines. Nowadays, the typical river carrier is an altogether different individual — often a big corporation, far more prosperous than most railroads. His boats are efficient. Thanks to the beneficence of the taxpayers, he has a deep channel and big locks at his disposal, all free.

Even if there were no regulation of the railroads whatsoever, there would be absolutely nothing the railroads could do to "kill off barge competition."

To be sure — in some particular instance, like this one that Examiner Mohundro is now concerned with, a railroad might divert *some* tonnage from the river, just as barge operators (largely unregulated) are every day diverting a lot of traffic from the railroads. But does that mean that waterway competition would be "killed off—as the extinction of a steamboat line 50 years ago might have indicated? Obviously not — because there would be plenty more barge operators left, all of them eagerly looking for, and finding, more and more railroad traffic to divert by underpricing.

Who is the underdog, anyhow, on the transportation scene today? What agency of transportation needs the protecting hand of government to prevent some greedy "monopolist" from gobbling him up? The barge operators certainly can't keep on forever playing the role of poor Little Eva on the ice.

The attitude toward regulation typified by Examiner Mohundro's report is anti-economic — forcing transportation into high-cost channels, instead of those of lowest cost. Its effect would be to waste national resources and reduce the general standard of living. It extends "umbrella" protection to a burgeoning agency of transportation, obviously no longer in need of maternal care. Possibly this report is actually the law, but there's no doubt at all, from the standpoint of present-day economic reality, that the course it prescribes is just plain nonsense.

THE BETTER SUPERVISORS GET PROMOTED **2**

Who Makes

Our foreman is so useless, even the other foremen are beginning to notice it," said a worker of his boss. "The stars were certainly against me the day I was put in charge of that bunch—morons, most of them," said a foreman of his subordinates. "Yes, I'm afraid John hasn't lived up to our expectations. I guess we'll have to put him back on a machine as soon as we can arrange it," said a shop superintendent of one of his foremen.

These three typical comments indicate the conflicting opinions held by people about supervision. They also indicate that supervision is an important task and a difficult one.

Of course, it is important. Industrial activity is based on the boss-bossed type of organization—the big boss, the little boss, and the straw boss, not to mention, of course, the union boss. Perhaps that is why one advisor told a graduating class at the Massachusetts Insitute of Technology in 1929 "Marry the boss's daughter!"

And of course, supervision is a difficult task. Human beings are hard to control. The gods found this out—they got into ungodly trouble when they took sides with the humans in the Trojan War. And human beings who try to control other humans also find it out. Human beings may need, and want, leaders or controllers but they usually make big demands on leaders. In industry, in a world of deadlines, routines and self-survival activities, the supervisor finds himself confronted with the demands of irresponsible youths, ambitious subordinates, hard-pressed wage earners and misfits. As one supervisor was told by his psychiatrist, "The trouble with you is not that you live in a world of fantasy: you are only too well aware of this world of grim reality."

Varied solutions are proposed for improving supervision. "It is mostly a matter of methods," claim the industrial engineers. "Study the job, the motions, the time spent on it, etc., and your supervision is bound to be better."

"Be objective. Be impartial. Analyze and plan. Work to a formula. Cut out emotions. Learn the techniques of controlling, directing, etc.," says the "brain," unaware that a brain cannot work without a heart.

"Be democratic," advises the humanitarian. "Consult; don't insult; the boys expect it." "Be the boss, the master," says the tough guy. "The boys respect it."

"Training is the thing," advocates the trainer. "Give us the guys in groups and you can forget supervisory problems."

Many Suggestions

Then the youngsters chip in: "Age is the important factor. How can you expect old fellows of 50 to do anything useful. Promote us and we promise you supervision you will be proud of."

"Company policies are the key to supervision," put in the planners. "Bad policies, bad supervisors. Good policies, good supervisors."

The educationalists—the academic ones—point another way: "It is all a matter of a good formal education. Appoint only the man who has a degree—two if possible—and your management and supervisory problems will be taken care of." Presumably the problem will be killed by degrees.

Many Answers

And so on. But this is not the end of the conflicting opinions. There are also the conflicts which surround supervisors in the work place itself. "This is the way I want it done," says the superintendent; "Hold on," says the staff engineer, "That's not quite according to standard." "Why not handle this my way," says the shop steward. "Be careful," says the industrial relations expert, "you might start a precedent." "Don't you think I am worth an increase?" demands the assistant foreman. "Wait for job evaluation," cautions the salary administrator. "You may think Bill should get the promotion but headquarters think otherwise," etc.

No wonder confusion reigns and everyone agrees that supervision is a difficult task. This article, therefore, will be an attempt to sort out the confusion and point to some ways of making supervision more effective; particularly on the railroads.

First let us satisfy ourselves that railroad supervision needs improving, that the average supervisor should be a more effective supervisor.

No railroader, probably, would claim that his road is as effective as it should be. And the major responsibility for this inadequacy must rest with supervisors. They, from the president down, get their work done through their subordinates, and if the total staff is less efficient than it should be, then this must be a direct reflection on the efficiency of the boss of each one of them.

Another pointer is the evidence that is coming lately from the senior officers and supervisors on railroads which are carrying out systematic appraisals of their management team. Here, for example, is a brief picture of the need for improved supervision on the Canadian National. (For

---

This is the second in a series of Railway Age articles on the very important subject of upgrading supervision. The first article appeared February 27, p. 18. The third is scheduled for April 30.

If there is sufficient demand, these articles will be reprinted in pamphlet form and sold at a nominal price. Anyone interested in reprints should address: Managing Editor, Railway Age, 30 Church Street, New York 7.

---

a Good Supervisor?

By GEORGE N. DAFFERN
Research Assistant, Personnel Department
Canadian National

more detail see Railway Age, Feb. 27, p. 18.)

A representative 946 CNR supervisors had their performance appraised by their immediate chiefs. In the opinion of those immediate chiefs (and who better could know their performance?) 122 were not satisfactory leaders; 99 did not show sufficient initiative; 99 did not make satisfactory decisions; 93 were not showing adequate analytical ability and imagination; 118 did not express themselves satisfactorily; 106 were not planning and organizing satisfactorily; 123 did not get along properly with subordinates and others; 60 did not delegate duties satisfactorily; 81 were not training and developing subordinates sufficiently well; and 129 were not satisfactory in controlling the costs which come under their jurisdiction.

Apparently there is room for improvement here. And since every one of these supervisors is responsible for the efforts of subordinates —in each of whom something like $24,000 worth of capital is invested —there seems to be good reason for saying that improvement in their supervision is necessary.

We shall return to these particular railroad supervisors again. Meanwhile, to help us in this sorting out process, **what sort of a person is the supervisor?** Is he something special? Is he different from his subordinates? Basically he is not. The vast majority of supervisors on our railroads differ no more from their subordinates than they differ from each other.

We hear a lot about the born leader. (A misleading statement. About the only truth in it is that leaders are born.) Everyone is born and practically everyone can lead, and does lead, in one situation or another. As children we often lead our parents—albeit by the nose. Even the most servile subordinate often leads his family or neighbors in some project or another.

The New England journalist and poet, Walter Foss, wrote: "And in the average man is curled the hero

ARE YOU AN EFFECTIVE SUPERVISOR?

If you can justifiably tick "yes" against the following questions it's most likely you are.

	Yes	*No*
• Do you let your subordinates know that you expect, and work for, the best possible productivity from them?	.....	.....
• Do you spend more time on the leadership part of your job than on production?	.....	.....
• Do you consider the efficiency of your subordinates the real measure of your own efficiency?	.....	.....
• Do your subordinates like the way you plan and organize?	.....	.....
• Do you deal expeditiously with subordinates' grievances and complaints?	.....	.....
• With their promotions, transfers and pay increases?	.....	.....
• Do you keep them fully informed about happenings that affect them?	.....	.....
• Do you let each of them know how he is getting along?	.....	.....
• Do you go to bat for your subordinates?	.....	.....
• Do you take a real interest in them individually and as a group?	.....	.....
• Are you helpful and considerate to a subordinate who does a poor job?	.....	.....
• Do you welcome subordinates' suggestions	.....	.....
• Do you give subordinates sufficient scope to handle their jobs themselves?	.....	.....
• Do you train subordinates—for better work and better jobs?	.....	.....
• Do you consider your group one of the best groups?	.....	.....
• Do you encourage team spirit and a sense of solidarity among subordinates?	.....	.....
• Do you hold regular meetings with your subordinates as a group?	.....	.....
• Do you have sufficient influence with your seniors?	.....	.....
• Do you have sufficient autonomy yourself?	.....	.....
• Are you kept sufficiently informed by seniors?	.....	.....

stuff that rules the world." And so it is with supervision. Just as challenge and opportunity can bring forth heroism from the average person, so the challenge and opportunity of supervision can bring forth in the average worker what it takes to supervise.

All this means that the real difference between a supervisor and his non-supervisory subordinate is that the supervisor has a supervisory job to do and the subordinate does not. The difference is not in the persons, therefore, but in their jobs. This does not mean, of course, that supervisors do not need to possess personal qualifications such as the ability to analyze or the ability to express themselves properly. Of course they do.

What it does mean is that effective supervision is not so much a matter of inborn leadership ability as it is a matter of doing what a particular supervisory job calls for. Supervisors do not get their supervisory jobs because of their genes but because they know enough of the particular supervisory job to be done.

Bosses Face New Conditions

From the supervisor let us now turn to the supervisory job. Supervision, of course, has changed in many ways since man started working under the direction of another man. One business leader, in giving what he termed the evolution of management attitude to workers, classified the steps as follows: slavery; servitude; welfare; paternalism; participation; trusteeship and statesmanship. Such evolution has taken considerable time, but perhaps at no time in the past have changes occurred so much so as recently.

Today's supervisor is faced with far different problems from those his counterpart faced 20 years ago. There is, for example, the ever-increasing influence of trades unionism ("The delegation to see you again, Mr. Smith"); there is the ever-increasing size of organizations ("And the usual six copies to the usual six staff departments"); and there are the ever-increasing outside influences ("Check this against government Order 490D, Section 49, Subject 9")—to mention just three of the most obvious changes.

The supervisor is obliged constantly to be tackling new situations, constantly to be moving into unknown fields, constantly to be learning new skills. How, then, can the supervisor be helped to cope with these new situations? How can he be helped to acquire the new skills he needs?

From the examples given earlier we can appreciate that the supervisor is subjected to a bewildering number of approaches from which to choose. At the risk of adding to this bewilderment, let's take a look at one more approach. This approach has been provided by the University of Michigan, but it is not something dreamed up in an ivory tower, far from the hustle and bustle of the supervisor's work place.

This approach is based on the results of systematic studies made by the university in various industries, including one railroad. It is based on actual reactions and opinions of supervisors and subordinates. While the university people have sought to interpret their findings, in the main they merely report facts—actual facts about supervision and supervisors.

First a little more background to the studies. In April 1947, the Office of Naval Research made a grant to the Survey Research Center of the University of Michigan to work on a program "to discover the underlying principles applicable to the problems of organizing and managing human activity." The second objective was to discover how to train persons to understand and use these principles skillfully. Since then the university researchers have surveyed many thousands of persons in 12 different organizations.

Screening Methods

The Michigan people adopted the criterion that an *effective* supervisor is one whose group has a high standard of production, and whose subordinates have high morale, or, putting it in another way, a high degree of job satisfaction. They then set about finding who were, and who were not, effective supervisors in the industry they were to study. This they did by talking to department heads and other seniors in a position to know, by checking production and productivity data, by talking to subordinates. After that they did much talking, questioning, probing, sorting and interpreting.

The Effective Supervisor

What facts emerged as a result of all this effort? It was apparent that an effective supervisor:

1. Gets over to his subordinates that he expects the best possible productivity.

2. Does not work for that productivity at the expense of the human problems of people under his jurisdiction.

3. Is in fact employee-centered rather than production-centered, i.e., he spends more time on supervision than on production.

4. Sees his job, primarily, as one concerned with people rather than with equipment, schedules, etc. He sees his main task as something different from the production task of his subordinates; this is mainly a leadership task.

5. Is rated highly by his subordinates as a planner and organizer of the section's activities. They like the way he arranges things.

6. Sees to it that he handles expeditiously recommendations for his subordinates' promotions, transfers, pay increases and other personal matters. He hears promptly their complaints and grievances.

7. Keeps his subordinates posted on how well or not so well they are doing—individually or as a group.

8. Informs them of happenings in the organization that affect them.

9. In the opinion of the subordinates "goes to bat" for them. He takes a real interest in them personally and in their personal problems. Is really a part of the group. He is interested in what they are interested in. He likes to get their ideas and he tries to do something useful about them.

10. Is considerate with subordinates; he is helpful and understanding with anyone who has done a poor job.

11. Does not supervise their work too closely. He gives his subordi-

nates sufficient latitude to handle their own work. Although the major part of his own work is on supervision, it is that part of supervision concerned with planning and arranging for the group's efforts, with individual problems and with arrangements such as promotions, etc.

12. Trains subordinates for better work, and better jobs.

13. Thinks highly of his group's performance.

14. Does not work for individuality among his subordinates; he encourages team spirit.

15. Has sufficient influence among his own supervisors and other higher management; his subordinates believe he can get things done for them and for his section.

16. Has sufficient autonomy; he believes he has sufficient authority as well as responsibility.

17. Believes he is kept sufficiently informed on things by his own supervisor and other higher management people.

18. Encourages participation by subordinates in solution of his section's problems. He holds group discussions frequently. (This applies particularly for clerical and professional groups.)

Those are, to date, the major findings of Dr. Rensis Likert and his associates at the University of Michigan. Each one is valuable to any supervisor intent on self-improvement. And to return to those Canadian National supervisors who were found to be below par when they were appraised, each one of these findings is of value to them. How?

Shortcomings in Leadership

One supervisor in eight was not satisfactory in leadership—the qualification which sums up practically everything it takes to be a supervisor. "They weren't leading as they should be," said their appraisers. Some were too brusque, others too weak, some gave no leadership at all. Bearing in mind the point that supervision is mainly a matter of knowing what needs doing, and not doing, the university's findings should be an invaluable guide to a supervisor needing to improve his leadership.

The university's research makes it clear that the relations between a supervisor and his subordinates, stemming from his leadership, vitally affect production for better or worse. Also, productivity is not just a matter of a supervisor carving up the total amount of work required and sharing it out among subordinates—a "Do this or do that and I want it back by tonight," sort of approach.

There is, too, a vast difference between subordinates doing just enough to get by, and doing to the best of their ability. The findings make it clear that the supervisors have to earn, not just demand the willing cooperation of their subordinates. Further, today's employee expects a job that is interesting and a challenge to his ability. He expects adequate wages; treatment that recognizes his importance to the organization; sufficient guidance and information from his supervisor; sufficient opportunity for something better; and a feeling of security with his supervisor. With such a blueprint, those CNR supervisors could build themselves into better leaders.

The university's findings should help, too, those supervisors whose inadequacies listed by the appraisers were in "initiative," "decision making," "analytical ability and imagination."

"Does little out of the ordinary"; "Seems unable to make a prompt decision"; "Shows little foresight"—such were some appraisers' comments. As with good leadership, being resourceful, sizing things up, making decisions and using imagination are not inborn qualities. They depend basically on the supervisor concerned being reasonably sure of himself, or, in other words, really knowing the supervisory job.

Self-expression

Everybody can take the initiative—everybody does at some time or another. Every time we ask a question we take the initiative, and everybody asks questions. Aesop's ass which starved to death because it could not choose between two bales of hay, could have—and would have—summed up the situation and made a decision if he had known he had to do this, or die. So with supervisors. If they become aware of what they need to do to be effective supervisors—and the university's findings provide the clues—they will not long be lacking in demonstrating initiative.

"Self-expression" was also men-

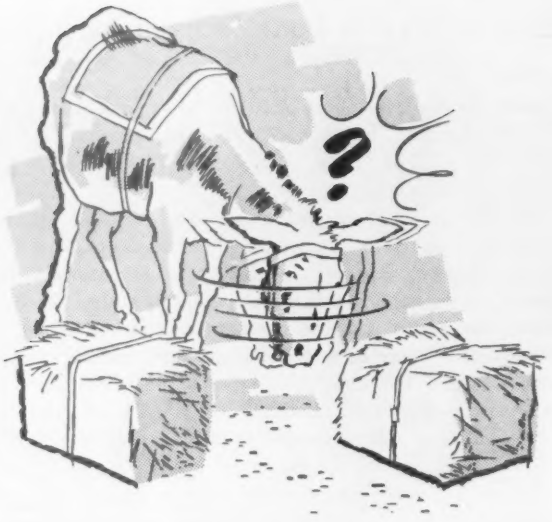
FIRST ARTICLE IN SERIES SCORED WITH HIM

To the editor:

The article by G. N. Daffern entitled "How Will Today's Supervisors Do Tomorrow?" which appeared in the February 27 Railway Age deals with, what is to me, the most significant challenge facing railroad managements today.

I feel that the subject of this article, which in reality is the "development of people," represents a challenge because railroads, in general, have been somewhat late in recognizing its importance. Railroad management or, if you will, railroad supervision (I feel the two terms are synonymous) have done an excellent job in the recent past in the development and use of material items such as machinery, equipment, methods and facilities; by doing so they have managed to keep pace with rising costs. Because it has been necessary to give so much attention to things, people probably have been neglected.

There is mounting evidence that this neglect has been recognized and that steps are being taken everywhere to remedy the situation. Mr. Daffern's article is a significant addition to that evidence and a very timely one. It should be read and absorbed by all levels of railroad management (supervision) and its subject should be recognized as one of the phases of planned management—an activity which, if pursued in a logical, orderly manner, will represent one of the most effective ways now available for railroads to keep pace with rising costs and render a competitive service.—*J. B. Hiltz, Jr., vice-president operation and maintenance, Delaware & Hudson.*



tioned by CNR's appraisers as a weakness in many supervisors. Why? Basically because either they are not sure of what they want to express or have not sufficient confidence in themselves to do the expressing. Again the university's findings should enable these supervisors to be more sure of what they should be doing and in consequence more sure of themselves.

Another CNR supervisory weakness, "planning and organizing," ties in closely with the university's findings. No railroader would start to lay a track without knowing the territory, the traffic to be carried, etc. If he did, he soon would be hopelessly bogged down. Similarly with supervision. If a supervisor really knows what his job entails he can plan and organize it properly; if he does not, he cannot. He muddles through, as was said of some of those inadequate supervisors.

"Getting along with others," was another inadequacy reported of railroaders. "Every man for himself," said the elephant as he danced among the chickens; and in industry many people think they can get ahead by pushing people behind. Anyone who studies the university's findings should benefit from the realization that those days are over, or as good as over. In today's industrial world, the supervisor is just as dependent on his subordinates as they are on him, and unless he gets along well with them he will not get their cooperation and their best productivity. The University of Michigan findings also give pointers to the supervisor as to how he can get this cooperation.

Lack of delegation was another frequently listed weakness of CNR supervisors. "He should make better use of subordinates," "He tries to do it all himself," were comments made about some supervisors. Supervisors so pegged concentrate on today's job at the expense of tomorrow's. They tend to do what needs doing themselves, thinking that it's quicker and better that way. They fail to realize that supervisors are expected to get work done in the main through *other* people.

Delegate Responsibility

"You cannot help people permanently by doing for them what they should do for themselves," said Abraham Lincoln. And the university's findings show that an effective supervisor goes out of his way to give sufficient scope to subordinates so that they can feel proud of their own efforts and go on to tackle more important assignments. They also show that, in today's large organizations, the supervisor either has to delegate or he will cease to grow in capacity and in the scope of his work.

Inadequate training and developing of subordinates was a frequent criticism on the railroad appraisal forms. "He should be better in staff development," was said of some supervisors. Dr. Likert reports that the effective supervisor trains his subordinates both for their present jobs and for better jobs. He is not so preoccupied with the work to be done that he sees his subordinates only as the doers of that work. In other words, he doesn't have that attitude summed up in such remarks as "I'm too busy meeting deadlines to bother with training, let the training department take care of it."

The university's studies emphasize that the effective supervisor gives much thought and time to guiding, training and encouraging subordinates. The studies also bring out that because there is no other training as effective as training on the job by the immediate supervisor, a boss has to help his subordinates personally to improve in their work if he wants to becomes more effective in his own.

Cost control, another inadequacy mentioned above, is almost synonymous with staff control—the payroll is the major part of railroad expenses. The university's findings by helping a supervisor to be a more effective supervisor will help him be a more effective cost controller.

To sum up, effective supervision is not merely a matter of the personal capabilities of the supervisor. Many capable persons are not doing their supervisory jobs as well as they might because they do not have the right conception of what their jobs entail. The test of effective leadership is the effectiveness of the subordinates being supervised, not the seeming effectiveness of the supervisor.

Effective supervision is, basically, providing the right conditions of work—in the full sense of the term—for subordinates. This means that the supervisor must concentrate on what his subordinates need in order to give of their best to the organization.

The recent studies of the Research Survey Center of the University of Michigan are an excellent guide to a railroad supervisor intent on getting the right conception of his job, one intent on providing his subordinates with the most productive environment. With it, any keen supervisor cannot fail to improve himself. At the same time the inefficient supervisor must challenge himself as Brutus was challenged:

"Men at some times are masters of their fates: the fault dear Brutus is not in our stars but in ourselves that we are underlings."*

*Shakespeare, "Julius Caesar," Act I, Sc. 2.

TRACK SCALE at Kirk yard, where tests were made, is a short distance down from hump crest. Main retarder in foreground.

OPERATING and recording components of the electronic scale are housed in desk of weighmaster who has clear view of the scale.

Electronic Scale Put to Test

Results of continuing experiments indicate that automatic weighing of cars in motion, employing recently developed electronic sensing devices, is advancing beyond experimental stages

The application of electronic principles and instruments for automatic weighing of freight cars in motion, and recording such weights, is emerging from the "proving ground" stages of experiment and trial use. This was the point of a paper at the recent AREA convention at Chicago by Verne C. Kennedy, president of Streeter-Amet Company, from which this article is adapted.

Weighing freight cars in motion, with automatic determination and recording of their weights by mechanical means, has been accepted U.S. practice since 1888. "Electronic weighing" and "electronic track scale," when first talked about, said Mr. Kennedy, seemed to provoke the hopeful interest and expectations of railway operating officers concerned with weighing moving freight cars rapidly and with sufficient accuracy, particularly in modern high-speed hump yards.

Until now, he explained, there have been reported no factual or comprehensive data to indicate whether such facilities fulfill expectations or requirements as regards comparable accuracy, consistency, and general utility.

Mr. Kennedy described extensive tests and studies conducted recently on one electronic scale used to weigh cars in motion, and went on to report and analyze the information obtained.

The data were collected jointly by the Elgin, Joliet & Eastern, which uses the scale, and the Streeter-Amet Company, which designed and installed the electronic weighing system. The tests were conducted under the supervision of the Western Weighing and Inspection Bureau, and were witnessed by representatives of that agency, and by others having an interest in the studies.

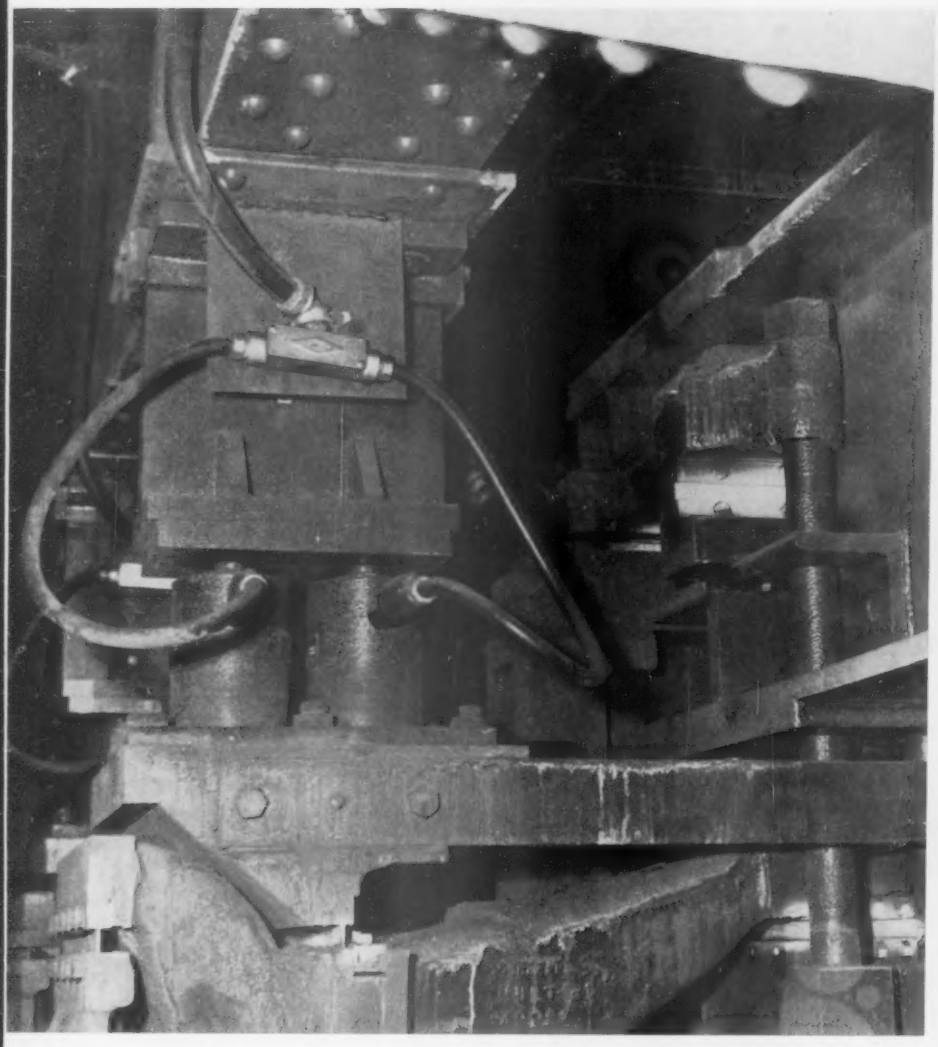
How the Load Cell Works

Actually, the term "electronic," as used in connection with scales, applies only to the instrumentation, and is not truly descriptive of the scale. "Load-cell scale" is the preferred term, Mr. Kennedy said, inasmuch as load cells, instead of levers, are the primary weight-measuring components. A typical load cell represents a form of electric strain-gage device, which acts as a transducer to convert applied load forces into electric signals — the strength of the signal (voltage) being directly proportional to the magnitude of the load.

By means of wires in conduit the signals are transmitted to the instrument assembly, which may be at any convenient adjacent or remote place. Incorporated in the instrument assembly are the elements which receive the signals, amplify them, and cause them to actuate electromechanical units that print appropriate weight values in digital form on a scale ticket or on tape or other record forms.

The load-cell scale which was the subject of study is in Kirk yard of the EJ&E at Gary, Ind. The scale proper is 50 ft from the apex of the hump, with weigh rails 90 ft long on a 3 per cent gradient.

The weighbridge supporting the weigh rails is mounted upon eight pairs of load cells which, in turn, are mounted upon the main levers of a conventional-type track scale equipped with a manually operated weighbeam. Thus the installation



WEIGHBRIDGE of the Kirk yard scale is mounted on eight pairs of load cells which, in turn, are supported on main levers of conventional track scale. The two cylindrical objects in this view comprise one of the pairs.

comprises two independent weighing systems and permits weighing of a car either manually on the lever system and weighbeam or automatically on the instrumented load-cell system. The weighbeam of the lever system and the instrument console of the load-cell system are installed within the same scale house, a circumstance which facilitated comparative weighing with the two systems during the studies.

Standard Test Cars Used

The study reported here began October 17, 1955, with an initial test and calibration of both weighing systems. Standard-weight test cars representing known-value test loads of 60,000 lb, 80,000 lb and, in combination, 140,000 lb, were placed at appropriate positions on the weigh rails, and the weight values indicated on each weighing system were observed and recorded.

Eleven separate observations were made on the lever scale, and 22 observations were made on the load-cell scale. In this test the mean errors for both systems were well within the applicable acceptance tolerances; the maximum error for the load-cell system was 100 lb, which is the value of the minimum weight print interval, and the mean errors for the two scales at any load differed by less than 50 lb.

Following the initial tests with standard weight loads, seven road cars ranging in weight from 43,000 lb to 192,000 lb and in length from 40 ft to 65 ft were weighed on the lever scale while stationary. They were then humped at normal speeds seven successive times, and their weight values automatically recorded on the load-cell system at the end of 3 seconds scale-borne time. (Due to the hump geometry, the time was reduced to 2.5 seconds for two 65-ft cars.)

A total of 43 running weight values were recorded on the load-cell scale. Plotted data giving the results of this test show that the mean weight difference for each car was well within the maintenance tolerance and that only two of the 43 differences exceeded, by very small amounts, that criterion.

The average error per car was in the low order of —29.8 lb; in three instances there was zero weight difference; and the numbers of plus and minus weight differences were equal.

These comparisons were made with the automatic weight recorder of the load-cell system set for 3 seconds scale-borne time. For information regarding possible effects of running speed on weighing accuracy, 21 additional observations were made with sensing time reduced to 2.5 seconds. Although the data may not be sufficiently comprehensive to warrant conclusion, they indicate that a running time of 2.5 seconds may be adequate for the particular installation, said Mr. Kennedy.

Weekly Comparisons

To supplement the studies outlined, a series of weekly weighing comparisons was made during November and December, 1955. Four hopper cars, empty or loaded with slag, were utilized. The weekly procedure was to weigh each car stationary on the lever scale and subsequently weigh it automatically several times while in motion on the load-cell scale. Forty-one such comparisons were made up to November 21. With 64 earlier comparisons a total of 105 comparative weighings were available.

For analysis of these data statistically, each weight difference was con-

verted to equivalent percentage of car weight, and the resulting values plotted to show the frequency distribution. It is significant that 95 per cent of the weight differences were less than the variation allowed the load-cell scale for weighing a load at rest, that the average weight difference for all comparisons was only 40 lb, and that the differences had a plus sign in 48 cases, a minus sign in 53 cases, and had zero value in 4 cases.

One month after the studies were begun, the separate systems were again tested with the standard weight loads of 60,000 lb, 80,000 lb and 140,000 lb. The test results showed no significant change in the accuracy of either system, and demonstrated that each had maintained its initial calibration. Mr. Kennedy noted that during the period of these studies no equipment adjustments or modifications were made, except for the usual occasional adjustment of zero balance on each system.

A report to the Western Weighing and Inspection Bureau referred to "the weekly tests run between October 31, 1955, and January 30, 1956, in which you will note there were 169 running tests made during the period, 88 of which were minus and 81 were plus errors. Minus errors amounted to a total of 18,340 lb, and plus errors to 10,270 lb for an average of 8,070 lb minus. This is an average minus weight of 47.75 lb per car.

"Total errors on which cars exceeded 0.2 per cent allowable tolerance amounted to 24, of which 14 were on the minus side, averaging 127.7 lb, and 10 were on the plus side, averaging 155.8 lb per car. Four of these errors occurred during the first 88 running tests, and the balance of 20 occurred during the next 69 tests, with none in the last 12 tests.

Some of these errors are known to have been caused by cars spilling material due to bumping in the retarders and being allowed to run down into the yard and bump other cars."

SUMMARY OF FINDINGS

Although the tests and studies are being continued to develop additional data, Mr. Kennedy believes the information collected thus far warrants some specific conclusions regarding the particular installation studies, and some generalizations concerning load-cell track scales as a type. He stated them as follows:

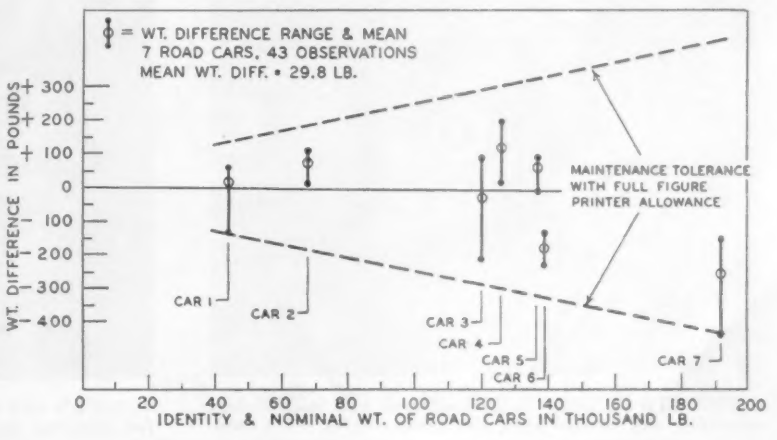
1. The load cell weighing system at Kirk yard, with the improved instrumentation developed by Streeter-Amet Company and the Elgin, Joliet & Eastern, permits freight cars to be automatically weighed in motion without sacrificing essential accuracy for operating speed.

2. The satisfactory performance of the Kirk yard load-cell scale demonstrates the efficacy of a new instrumentation feature which was specially developed for the installation, and which automatically senses and anticipates the total weight of each car as successive pairs of the car wheels are received on the scale rails. This new approach, a principle widely employed in electronic applications for military use, gives promising indication that future developments may significantly reduce the time required for motion weighing.

3. Throughout the period of these studies and tests there were no failures or breakdowns of any components of the Kirk yard load-cell scale. Nor were any corrective adjustments necessary except for occasional correction of zero balance, which is common to all weighing machines.

4. It should be understood that the final and successful solution of the problem at Kirk yard was realized only after expenditure of much time and money for experimentation, research, engineering study and development of new instrumentation. It was found necessary, for example, to develop special means and equipment for excluding moisture from parts, eliminating the effects of stray electric currents, grounding circuits and shielding conduit cables, etc. These, and other factors, depending upon conditions at each installation, are to be expected as trouble sources in any load-cell scale, and require special treatment if they are not to affect weighing accuracy and consistent performance.

5. The data relate to but one scale, produced by one manufacturer and operated by one railroad. Mr. Kennedy urged that, for the benefit of railroads contemplating future procurement of load-cell scales, corresponding studies and tests be made of installations on other railroads, and the information supplied to the AREA during this coming year.



WEIGHT differences, with mean values, of seven road cars humped and weighed at normal speeds seven successive times. Comparison is with dormant weights on lever scale.

Old Freighthouse Made Like New

. . . WITH CENTRALIZED CHECKING

New loudspeaker system in CPR Toronto freighthouse enables checkers in central office to work with callers in freight cars and platforms handling 120 LCL cars daily

One way to beat the competition for freight business is to build a new freighthouse in every major terminal. Another way is to improve operations in the old houses. A very effective way to do this is to install a modern communications system. Benefits accruing to the Canadian Pacific from such an improvement at its Toronto freighthouse include these:

1. LCL moves through the house in less time than previously;
2. Reduced operating expenses;
3. Better service to shippers; and
4. Ability to handle a greater volume of freight.

How the House Is Set Up

The house works from 8 a.m. to 6 p.m., five days a week, being closed Saturday and Sunday. The house is set up at night, only two switches being made during the day: (1) track No. 3 is switched at 1:30 p.m. for extra loads; and (2) cars are pulled at 5:30 p.m. for train No. 910 for following morning delivery at Montreal.

Three types of freight handling operations are carried on at this freighthouse: inbound, outbound and transshipment.

Inbound freight arriving in freight cars is for delivery in Toronto and vicinity, and includes bond freight (LCL from the United States and overseas, i.e., import freight). Outbound freight is brought to the house by pick-up trucks from Toronto and vicinity, and is loaded into freight cars for movement over the CPR and its connections. Transshipment arrives in freight cars, some in trap cars, and this freight is reloaded into other cars for destination.

The freighthouse consists of a multi-story headhouse and three platforms: inbound, outbound and transshipment. These platforms are served by eight stub-end tracks with a total capacity of 155 cars. About nine cars of bond freight are unloaded daily on the inbound platform, and then moved by hand truck onto freight elevators for movement to the second floor bond shed.

How Freight Is Checked

When a gang starts work in the morning, one of the callers goes to the central checking office to receive his gang's first assignment. At the same time he picks up a portable loudspeaker with an extension cord. When he and the gang arrive at the car to be unloaded, the speaker extension cord is plugged into the nearest loudspeaker system outlet, and the portable speaker is hung on a nail inside the car or in the doorway. Meanwhile, the checker, knowing the spot number at which the gang will be working, goes to a switchboard in the central checking office and makes a connection between his loudspeaker console and the circuit to the outlet at the gang's spot number.

When one of the callers has turned up several packages so he can easily read consignees' names and addresses, he presses a signal button on his

CHECKER'S CONSOLE is self-contained with loudspeaker, amplifier and control keys, has a capacity of eight lines.

CALLER'S SPEAKER, rated at 5 watts, has a pushbutton for signaling the checker.

SELECTOR STATION in bond shed has numbered pushbuttons for selecting and calling the checker. Station is cut off the line when cover is closed.

portable speaker. This actuates a buzzer and light on the checker's console. The checker answers by pressing the push-to-talk bar on his console and talking into the loudspeaker in the face of the console. He also has an earpiece, chest microphone and footswitch, which enables him to talk and yet leaves his hands free. The checker has the waybills for the car being worked, and he tells the caller what numbers to mark on the packages.

While one caller takes a load to another freight car or to a spot number, another caller in the gang unloads packages and gets the spot numbers from the checker. When a gang has finished working a car, they call the checker to receive their next work assignment. One of the major benefits of the centralized checking system is that a checker is able to work with two or three gangs instead of only one at a time.

"Intercom" and Paging, Too

As part of the loudspeaker communications installed in the freighthouse, a complete system of intercommunication between offices and a general paging system are included. For example, the assistant general agent has a master station (loudspeaker console) which connects him with the central checking office, general agent's office, shipping office, bond office and cartage office. He can also make calls over the paging system on the freighthouse platforms, bond room and team track area. In addition, the assistant general agent can monitor calls of the checkers and callers without their knowledge.

An assistant general foreman, who is directly in charge of the central checking office, and the general agent have master stations similar to the assistant general agent's. Each checker has a paging bar on his console so that he can page over the system.

If a checker or person in one of the offices on the "intercom" system wants to talk to a man on the platform or in the team track area, he calls the man on the paging system. The man paged will go to one of several answer-back stations and press the bar on top of the postmounted speaker. This action will cause a light and buzzer to be actuated on the caller's console. He answers in the conventional manner, and the man on the platform continues to hold down the answer-back bar while he talks and listens. Releasing the bar cuts answer-back station off line.

Special "Intercoms"

Permanently mounted selector stations are mounted on the truck side of the inbound platforms where freight is loaded into highway trucks for delivery in metropolitan Toronto. Each city delivery truck follows a specific route for delivery. On returning to the freighthouse, trucks pick up outbound freight. The shipping bills are sent to the centralized office before the truck is unloaded. Each package or piece of freight is handled by the caller, who notifies the checker at loading time. Any freight that cannot be loaded the same night is left on the spot number so that in the morning it can be quickly loaded into a truck.

The Old Way and the New Way ▶

MASTER STATION has handset for privacy when making calls. Assistant general agent can monitor checking operations, page entire house or call other offices.

To provide two-way communication between the checker and the caller working on these trucks, selector stations were mounted on the truck-side wall near doors. These stations have a speaker in the face of the control box and a cover which hinges at the top, and is raised to put the station on line. Two rows of numbered buttons are mounted inside, and are pushed to form a two digit combination for the checker being called.

As an example of the operation, the checker assigns callers to the various truck spots and they go down to the platform to begin loading. If the checker is No. 15, a caller will go to the selector station, raise the cover and push button No. 1 in the left row and button No. 5 in the right row. This actuates a buzzer and lights an indication lamp on checker No. 15's loudspeaker console. He answers using the push-to-talk, release-to-listen method.

The caller need not hold any bar or buttons to maintain connection with the checker. When a caller is finished checking all packages for a truck, he closes the cover on the station, disconnecting it from the line. By means of this two-way communication, a checker can work with callers loading nine trucks at a time. Selector stations are also located on posts in the bond room where import freight is handled.

The loudspeaker equipment for this project was furnished by the Executone Corporation, and special cable designed for minimum interference between circuits by the Okonite Company.

The Old Way

Under the old system of operation, a checker worked a four-man gang (one loader and three truckers). The checker took the waybills with him out on the platform by the freight car or truck being worked, calling off berth or spot numbers to his gang as they loaded or unloaded packages. At best it was not too easy to keep papers neat and in order, because the checker usually worked standing up with a clipboard for a desk. At Toronto, forty checkers were required under this old system of operation.

The New Way

Under the new system of operation, all checkers are in a central checking office, and work with three-man gangs via loudspeaker communications. Fifteen checkers handle the present business, but the communications system has capacity for 28 checkers, thus providing spare units now, and also to take care of future communications requirements. Each checker works at a shelf-type desk with soundproof sides, and has a loudspeaker console for talking to the men working on the platforms (gangs).

NYC PRESIDENT Perlman examines results obtained on the Baird direct-reading spectrometer at the petroleum research laboratory at Collinwood. Dials indicate the concentration of each element in the sample under test.

Why the NYC Tests Crankcase Oil

Fewer engine failures and more oil mileage are results to be obtained by having a comprehensive and regular lubricating oil examination

Diesel engine lubricating oil examinations are increasingly important in determining the servicing and shopping of New York Central locomotives. A systematic and systemwide lubricating oil test program is intended to decrease oil consumption and to prevent costly diesel engine failures by assuring adequate lubrication. This program is operated by the engineering services organization working closely with other sections of the mechanical department

Eight completely equipped oil test stations, 57 other terminals where partial examinations are made, and the petroleum research laboratory at Collinwood shops are all important links in the program. The petroleum research laboratory also is concerned with the characteristics of diesel fuel and lubricating oils purchased for use on the system. This function is becoming more important as the Central steps up its purchases of lower-priced diesel fuels.

Crankcase oil is sampled each time a locomotive reaches one of the 65 testing locations for servicing or maintenance. If the terminal does not have one of the oil test stations, visgage and blotter tests are made by local mechanical forces. Visgage tests determine condition of oil; low viscosity indicating fuel leaks and high viscosity indicating oxidation. The blotter test is the guide for a change of lubricating oil filters.

Not all of the oil test stations are operated round-the-clock. When no operator is on duty, designated mechanical personnel at the terminal perform visgage and blotter tests and hold samples for more complete examination. All local terminals keep a regular lubricating oil record of the units assigned to them.

The oil test stations also make a blotter test for their oil samples. If the spot is dark or black, the precipitation test is run. This test determines the amount of dirt and other insoluble contaminants in the oil. Naphtha is used as the solvent. Any water present will usually form a layer at the bottom of the tube.

A flash test for fuel dilution is also made during the oil examination. Complete records are maintained at each oil test station for the units assigned to that entire district. Files give a chronological oil record

WHAT CAN SPECTROMETRIC ANALYSIS TELL?

PRINTED IN U.S.A. LOCO. NO. 1115 A NYCS MP-326

NEW YORK CENTRAL SYSTEM
SPECTROMETER ANALYSIS - DIESEL LOCOMOTIVE LUBRICATING OIL

ACME 64785-R

DATE	FE.	PB.	CU.	CR.	B	SN.	SI.	AL.	AG.			REMARKS	T
10-17	17	10	<10	3	<10	<1	<2	2	<0.4			10/8 Semi Annual	DE
10-31	13	23	15	5	15	<1	<2	3	<0.4			10/21	DE
11-16	14	27	11	5	15	<1	<2	4	<0.4			11/7	DE
12-2	20	65	12	6	15	<1	3	8	<0.4			11/21	DE
12-3	Form NYCS-MP326					Inspect Bearings							

LOCO. NO. 1115 A ENGINE NO. TERMINAL 1 2 3 4 5 6 7 8 9 10 11 12

The metals or mixtures of metals found in lubricating oils taken from diesel engines frequently permit a very accurate prediction of the engine component which is breaking down. Normal wear of an engine should show a gradual rise in the concentrations of all the metals used. The condition of the oil filters will have an effect on this trend. Looked for as warning signals are sudden rises and levels which go above those which have in the past indicated that a breakdown was imminent.

The typical record card illustrated is for an actual NYC locomotive and shows the changes in metal concentrations shown by each of its semimonthly examinations. The sudden rise in the lead (Pb) concentration caused the petroleum research laboratory to issue a corrective action request calling for a bearing inspection.

of the units, and also are arranged to assure that a regular sample is obtained from each locomotive.

In addition to these tests done during each trip that a locomotive makes to a maintenance plant, lubricating oil test stations prepare ash samples for spectrometric analysis: These samples are sent to the petroleum research laboratory at Collinwood, just east of Cleveland, Ohio. Ash samples consist of a small measured quantity of the oil mixed with a measured quantity of graphite supplied by the petroleum research laboratory. This mixture is heated to drive off the volatile constituents and the residue is then forwarded to the laboratory.

The New York Central requires Alco and Baldwin road unit samples each two weeks, and Electro-Motive and Fairbanks road unit samples each month. Switchers are sampled each quarter. Should engine condition necessitate an oil change, an additional sample from that crankcase is immediately forwarded to Collinwood.

District oil test stations issue reports of their work to the terminal concerned when a unit's lubricating oil condition indicates that the engine is in trouble. Reports can call for engine inspection, for filter change, for complete oil and filter change, or for a complete engine flushing and oil change. If excessive dilution is found, a bearing inspection is mandatory. These bearing inspections include the critical main bearings and two non-adjacent connecting rod bearings. When the oil is emulsified, a complete bearing inspection must be made. A monthly report of oil test station operation is compiled from daily reports for submission to the chief mechanical officer and mechanical superintendent.

Research Laboratory

Work at the system laboratory at Collinwood is centered around a direct reading spectrometer built by Baird Associates, Cambridge, Mass. This is said to be the first such unit ever installed for lubrication research on a railroad. Its most popular industrial applications have been in the metal industries. The spectrometer was ordered in 1954 and delivered early in 1955. The Central's first oil test station was established in November 1954 at Dewitt (Syracuse, N. Y.). Locomotives operating out of Dewitt were the first to be put on a regular spectrometric examination in March 1955. By the end of the year all the road power and most switchers were being examined this way.

Any chemical element when heated to incandescence gives off light waves of a specific wave length. The light emitted by each element is different, and the instrument which measures it can provide a precise identification of each element present. A measure of the quantity of light of each wave length emitted will give a measure of the amount of the element present.

Formerly all work of this type was done with spectrographs in which the light emitted by the unknown material was recorded on a photographic emulsion. Interpretation of the photographic plate can tell what elements and what quantities are present.

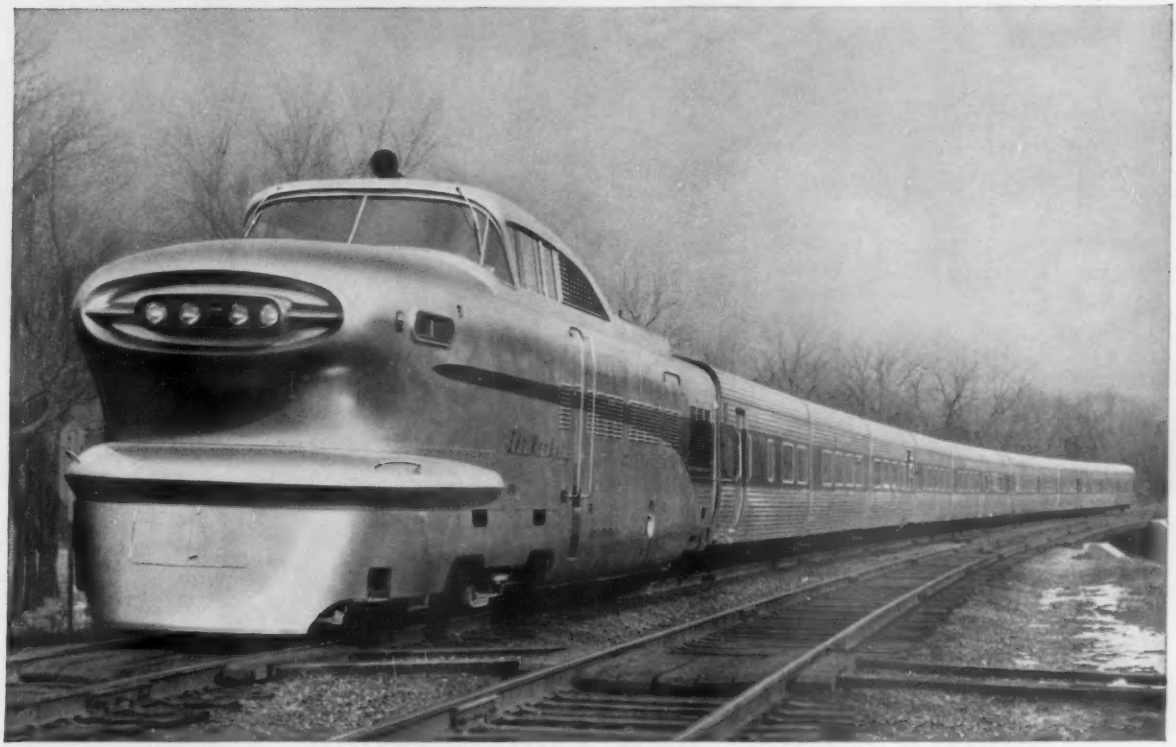
The Baird instrument used by the NYC picks up the elements on a series of photoelectric-multiplier tubes and through an electronic system automatically gives the quantity of each element on a series of direct reading dials: Results are given in parts per million (ppm). The direct reading instrument greatly speeds the number of samples that can be run. A typical day now finds the Central doing well over 100 samples. The ash received from the oil test station is heated to incandescence in an electric arc which is part of the spectrometer.

The NYC's instrument is set up to record the presence of iron, lead, copper, chromium, boron, tin, silicon, aluminum, silver, phosphorus, zinc, calcium, barium, potassium, magnesium and sodium. Iron, lead, copper, chromium, tin, aluminum and silver are metals used in the diesel engine components of NYC locomotives, and these serve as indicators of engine wear. The location and extent of the wear can be estimated.

Silicon and also aluminum are major constituents of most dirt picked up through engine air intakes. A boron type water treatment is used in all Central diesels and this element serves as an indicator of leaks

(Continued on page 42)

first on American rails— in passenger comfort!



Rock Island's new Talgo-type Jet Rocket features Honeywell Electronic Car Heating Control System

NOW ZOOMING down American rails is the train of the future—the new Rock Island Jet Rocket! This revolutionary, lightweight, high-speed train, built by ACF Industries, is a startling innovation in American railroading.

Designed for high speeds and economical performance, it has already enabled the Rock Island to improve schedules considerably.

For the last word in passenger comfort, the Jet Rocket heating system is controlled by Honeywell.. Rugged Honeywell Electronic controls keep a precise watch over car temperatures by controlling the train's electric heat and mechanical cooling. A unique Honeywell outdoor thermostat adjusts the hot water floor heat to changing outdoor temperatures—eliminating heat "pile up" and "cold wall chill."

The unusual length of the cars, 109 feet, and their extensive heating-cooling systems, posed no problems for Honeywell Electronics. With the exclusive averaging feature of the Honeywell Electronic system, two thermostats are used—one at each end of the car. Their sensitive electronic signals are averaged and the resultant signal controls both the heating and cooling system for perfect, even comfort throughout the car.

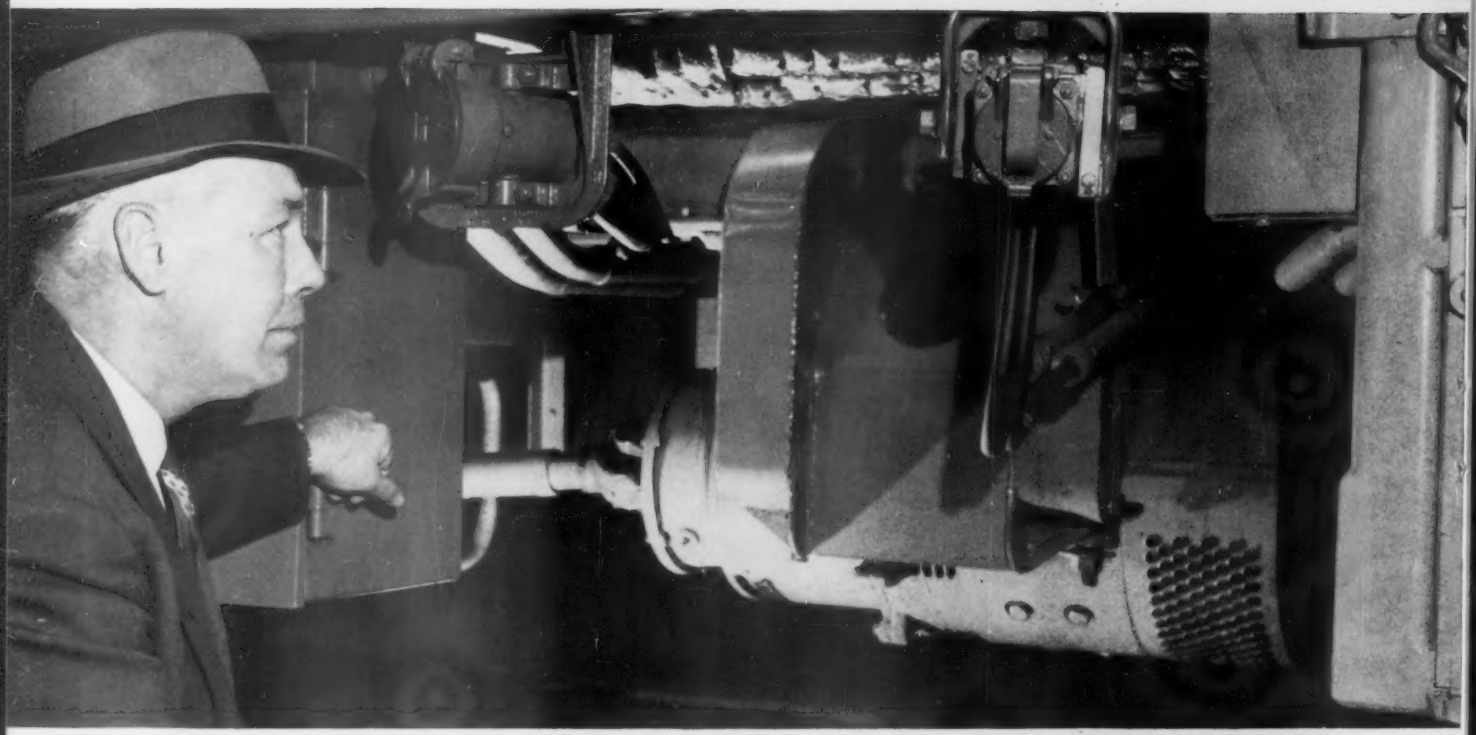
Savings from the Honeywell system are substantial for new trains like the Jet Rocket or for standard cars. And it is easily and economically installed as a standard shopping procedure.

For complete information on the modern Honeywell Electronic car heating system, just write to Honeywell, Dept. RA-3-49, Minneapolis 8, Minnesota.

MINNEAPOLIS **Honeywell**

H HONEYWELL First in Controls

112 OFFICES ACROSS THE NATION



G-E Axle-driven Motor Generators Help Provide Comfort and Convenience Aboard Union Pacific Streamliners

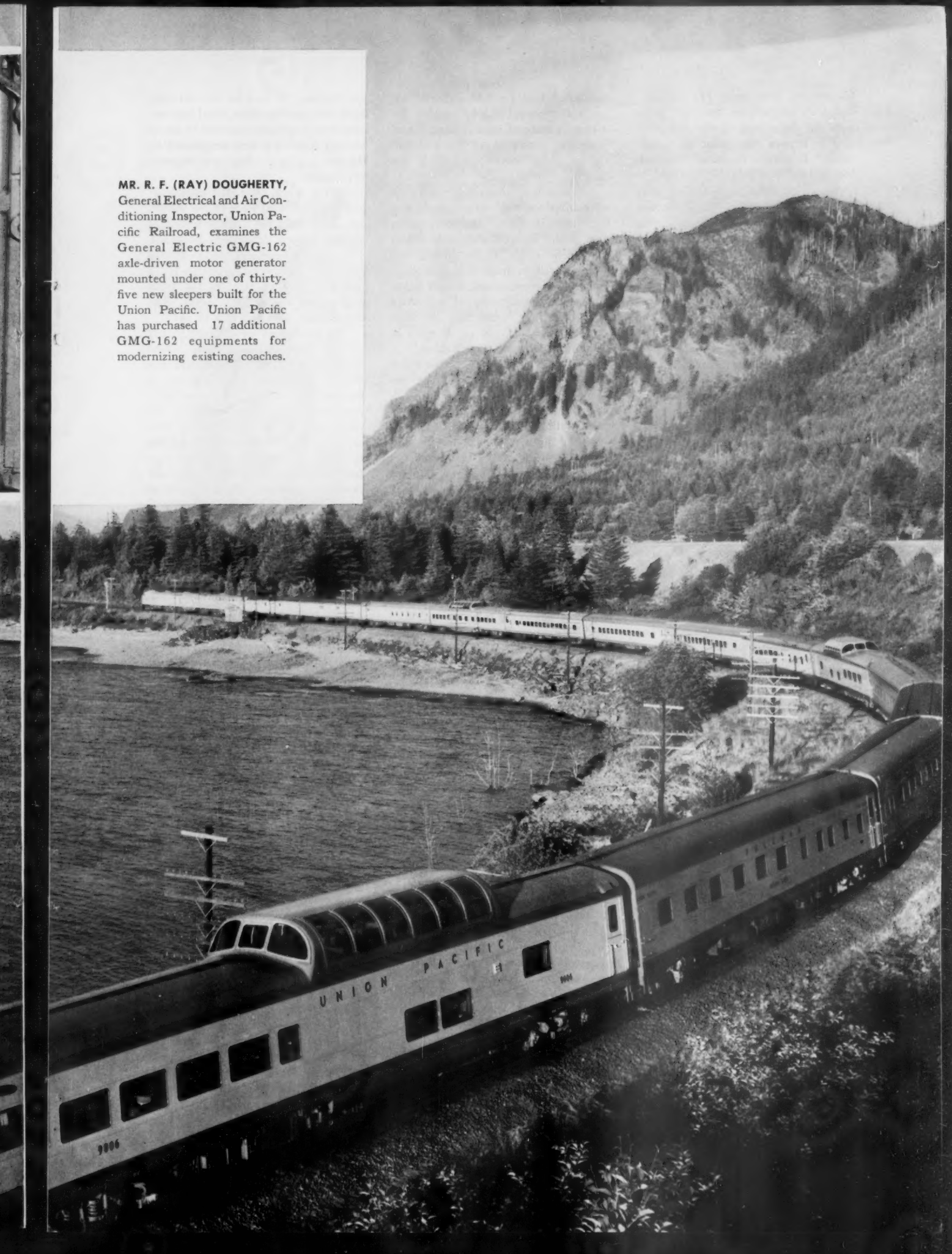
General Electric's new GMG-162 axle-driven motor generator now in use on Union Pacific trains has more reserve power than competitive equipment. Here's what that means:

1. Better battery record. There is ample power available to charge low batteries while the car is in operation. Therefore, fewer standby rechargings are required.
2. Should axle generators in other cars become inoperative, increased demand can be met effectively. In a recent test simulating emergency conditions, load requirements of four modern air-conditioned passenger cars were supported by one GMG-162.

In addition, General Electric's GMG-162 has a highly simplified control system, uses only two control panels, eliminates armature reversing switch, and reduces number of moving parts. This results in low cost installation and maintenance. For more information contact your G-E Apparatus Sales representative. Locomotive and Car Equipment Department, General Electric Company, Erie, Pa. 115-10

Progress Is Our Most Important Product

GENERAL ELECTRIC



MR. R. F. (RAY) DOUGHERTY, General Electrical and Air Conditioning Inspector, Union Pacific Railroad, examines the General Electric GMG-162 axle-driven motor generator mounted under one of thirty-five new sleepers built for the Union Pacific. Union Pacific has purchased 17 additional GMG-162 equipments for modernizing existing coaches.

(Continued from page 13)
that they stopped on their left sides with the front end of the first unit 550 ft beyond the point of derailment. The cars remained coupled, but were "considerably damaged."

The cars were of stainless steel construction, each mounted on two four-wheel trucks. One had seating capacity for 89 passengers and the other for 86. Each weighed 117,060 lb, and had 11 windows on each side. The windows were equipped with laminated, hermetically sealed safety glass sash, with rounded corners and applied from the inside.

The casualties included deaths of 30 passengers and injuries to 117 passengers, four train-service employees, and one chair-car attendant. The commission's report, No. 3675, was by Commissioner Clarke, and its finding as to the cause confirmed what the Santa Fe said at the time—"excessive speed on a curve." The train was restricted to 15 mph, and the evidence indicated it was traveling 68 or 69 mph when the derailment occurred.

The curve has a maximum curvature of 6 deg 12 min. It is on a double-track line where trains are operated by signal indications. The point of derailment is 3.8 miles east of Los Angeles Union Passenger Terminal, from which the eastbound train, No. 82, departed at 5:30 p.m., on time. The accident occurred 12 minutes later—at 5:42 p.m., when it was dark but the weather was clear.

The curve's 15-mph speed restriction is posted on a sign 9¼ in wide and 24 in. high—in 8-in. black letters on a background of reflectorized yellow material. The accident occurred after the train had run 2,187 ft beyond this sign.

Mental Lapse—The testimony of the engineer was that he had a mental lapse, and that he did not have a clear recollection of events which occurred after his train passed under a street viaduct, 1.46 miles west of the point of derailment. He was 61 years old. He entered Santa Fe service in 1918 as a fireman, had been running since 1939, and qualified for passenger service since 1942. His latest general physical examination had been received August 20, 1955, when he "met the physical requirements for his position."

After the accident, he was found to be in "good general physical condition," but the examining physicians concluded that he had suffered an "epileptic fugue attack," which involves "a state of mental lapse," and "was not conscious of his actions" as the train was approaching the curve

"Electroencephalograms which were made on two occasions during these examinations," the commission also said, "showed abnormal waves in specific areas of the brain, and were consistent with this diagnosis. This is a neurological condition which, in the absence of a history of unconscious spells, fits, or other symptoms, would not be detected in a routine physical examination."

The firemen said he called the speed-restriction sign and the engineer raised his hand in acknowledgement, meanwhile making a service application of the brakes. It was the fireman's next observation that the speed of the train was not reduced, so he said he moved to the engineer's side and warned him to make an emergency application of the brakes. He said he did not take action himself to stop the train because the engineer appeared to be in normal condition and responded to the warning by making an emergency application.

On the other hand, the conductor and flagman, who were in the second car, both said the brakes were not applied before derailment occurred. The report's comment on the brakes said they functioned properly for a test and another stop as the train approached the accident point. The commission also had this to say:

"No conditions were found in any of the inspections or tests which would have caused the brakes of any of the equipment of this train to become inoperative. . . . Under these circumstances, it appears that the speed of the train would have been properly controlled approaching the point of accident if braking action had been initiated a reasonable distance in advance of the point at which the speed restriction applied."

ICC to Investigate Passenger Deficit

The Interstate Commerce Commission will investigate the deficit from railroad passenger-train operation.

Acting upon its own motion, the commission last week instituted an inquiry (No. 31954) into losses on passenger and allied services. It will go into passenger-train revenues, expenses, and other related matters, including the rate of return on investment in road and equipment used in the service. It will also cover commission rules governing the separation of operating expenses and other costs between freight and passenger service.

"Possible ways and means of reducing and eliminating the deficit" will also be explored.

The 1955 deficit has not been reported. The 1954 figure was $669.5 million, which was $35 million less than the all-time peak of $704.5 million reported for 1953.

Figures are available back to 1936, since when there has been a deficit in all but four years—the war period of 1942 through 1945. The 1943 passenger-service net of $279.8 million was the best of the four. The deficit has become an issue in freight-rate-increase cases of recent years.

Times and places for hearings will be announced later.

ICC Dismisses Unions' Complaint

The Interstate Commerce Commission has dismissed complaints filed by railroad labor organizations against the plan whereby the Milwaukee supplanted the Chicago & North Western as the Omaha connection for transcontinental trains operated to and from that point by the Union Pacific.

The switchover was made October 30, 1955 (Railway Age, November 7, 1955, page 8). Labor organizations which complained to the ICC included the Railway Labor Executives' Association, Order of Railway Conductors & Brakemen, and Brotherhood of Railroad Trainmen. They alleged that the change violated various provisions of the Interstate Commerce Act.

In dismissing them, the commission had this to say: "We conclude that they are legally insufficient in that they fail to set forth facts which show, or tend to show, that the actions complained of result, or may

result, in a violation of the Interstate Commerce Act, or of any other act under which we have jurisdiction."

McPherson and Walrath Confirmed for the ICC

The Senate has confirmed President Eisenhower's appointments of Donald P. McPherson, Jr., and Laurence Walrath to memberships on the Interstate Commerce Commission.

Lawrence Walrath

Messrs. Walrath and McPherson are expected to take their oaths of office by the end of this month or shortly thereafter.

Mr. McPherson, a Pennsylvania Republican, will succeed Commissioner J. Monroe Johnson for a term

Donald P. McPherson, Jr.

expiring December 31, 1962. Mr. Walrath, a Florida Democrat, will succeed former Commissioner Martin K. Elliott for the remainder of a term which expires at the end of this year. (Railway Age, Mar. 5, p. 11).

Railway Officers

BURLINGTON.—R. E. Begitske, district storekeeper at West Burlington, Iowa, has been appointed diesel material supervisor at Chicago, succeeding **R. E. Kelly,** retired (Railway Age, Feb. 20, p. 16). **P. W. Bell** has been transferred from Lincoln, Neb., to succeed Mr. Begitske at West Burlington, and in turn has been replaced by **F. T. Hagemeier,** chief lumber inspector.

CANADIAN NATIONAL.—Norman T. Walton, assistant superintendent at Hornepayne, Ont., has been promoted to superintendent at Edson, Alta., succeeding **E. K. House,** promoted to employee relations assistant, operating department, at Montreal.
W. J. Mayo, superintendent, Montreal Terminals and St. Jerome divisions at Montreal, has been appointed senior superintendent of those divisions. **G. W. Keefe,** assistant superintendent, Portage-Brandon division at Winnipeg, Man., has been named superintendent, Montreal Terminals and St. Jerome divisions at Montreal.
L. M. Poitevin, division engineer at Levis, Que., has been appointed assistant district engineer, Quebec district, at Quebec. **J. R. Brayne,** assistant division engineer at Levis, succeeds Mr. Poitevin as division engineer there.
F. H. Lane, transportation assistant, Alberta district, at Edmonton, Alta., has been appointed assistant superintendent at Melville, Sask., succeeding **Sydney J. Wise,** who replaces Mr. Keefe at Winnipeg.
John Watson has been appointed superintendent, boarding car department, Western region, at Winnipeg. Mr. Watson will be responsible for providing more than 1,000,000 meals each year for maintenance men living in outfit cars along CNR lines throughout the west.
Walter G. Fielding, general agent, freight traffic department, CNR and Grand Trunk Western, at Birmingham, Ala., has been transferred to St. Louis, succeeding **William J. Kelly,** retired. Mr. Fielding's successor is **Donald L. Borst,** general agent at Flint, Mich., who in turn has been replaced by **Everett O. Alldredge,** commercial freight and dairy agent at Kansas City.

CANADIAN PACIFIC.—C. E. Lister has been appointed vice-president, Prairie Region at Winnipeg, succeeding **Guy N. Curley,** deceased (Railway Age, Jan. 23, p. 51).
A. O. Schwartz has been appointed signal supervisor, Manitoba and Saskatchewan districts at Winnipeg.

CHESAPEAKE & OHIO.—Hiram T. Askew has been promoted to general passenger traffic manager, with headquarters remaining at Richmond, Va. **J. W. Paul,** executive assistant passenger traffic manager, succeeds Mr. Askew as passenger traffic manager.
William R. Althans, general solicitor at Detroit, has been transferred

Hiram T. Askew

J. W. Paul

to Cleveland; **Glenn C. Wilber,** assistant general counsel at Cleveland, has been transferred to Detroit, and **H. E. Kirby,** cost engineer, has moved from Richmond to Huntington, W. Va.
G. H. Lindsey has been appointed trainmaster at Toledo, Ohio.

CHICAGO GREAT WESTERN.—The following appointments have been announced. **J. A. Boehm,** general agent at Cleveland; **C. H. Dawson,** general agent at Tulsa, Okla.; **J. F. Parkison,** assistant general freight agent at Kansas City, Mo.; **W. W. Rice,** district traffic manager at New York; **C. G. Stewart,** district traffic manager at Omaha, Neb. Headquarters of **F. P. Wagner,** freight traffic manager, have been transferred from Chicago to St. Paul.

ILLINOIS CENTRAL.—Otto H. Zimmerman, general manager at Chicago, has been named vice-president in charge of operation there, effective April 1, succeeding **Clyde J. Fitzpatrick,** who has been elected president of the Chicago & North Western.
R. K. Osterdock, trainmaster at McComb, Miss., has been appointed

THROW IT AWAY...

get
the facts from
NATIONAL

Railroad Specialties
Technical Services
NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY
Cleveland 6, Ohio

See advertisement on page 19

AA-2699

6100 Railroaders
(and prominent suppliers)
may be found in the industry's complete and only book of biographical facts:

WHO'S WHO IN RAILROADING
13th Edition

Included are practically all U.S. and Canadian railroad men with responsible positions, also railroad labor leaders, members of regulatory bodies, transportation economists, railway finance specialists, educators concerned with railroad problems, ICC practitioners, consultants, etc. Every railroad executive or supplier needs a copy. Order yours by sending check or money order for $14.00 to Railway Age Books, 30 Church Street, New York 7.

RAILWAY AGE BOOKS—
30 Church St., N.Y.C. 7

Send copy of WHO'S WHO IN RAILROADING with 10-day return privilege. $14.00 remittance enclosed.

Name .....

Address .....

City, State .....

acting superintendent, Vicksburg division at Vicksburg, Miss., replacing **E. E. Schlottman,** on leave because of illness. Mr. Osterdock's successor is **C. S. Condon,** who has been transferred from Cleveland, Miss., and who in turn has been replaced by **N. L. Meadows, Jr., J. P. Moran,** trainmaster at Fulton, Ky., has become trainmaster at Bluford, Ill., succeeding

Otto H. Zimmerman

H. R. Koonce, transferred (Railway Age, Jan. 23 p. 51). Mr. Moran's successor is **W. C. Woods, Jr.,** trainmaster, Chicago Terminal at Markham, Ill., who in turn has been replaced by **W. F. Corcoran,** transferred from the Chicago Terminal at Chicago. **F. A. Brink** has been transferred from Kankakee, Ill., to replace Mr. Corcoran, and in turn has been replaced by **M. C. Jacobs.** Mr. Jacobs has been succeeded at Freeport, Ill., by **E. L. Parker.**

Elias Lyman, Jr., has been appointed general freight agent (divisions) and **Earle A. Cross** has become assistant general freight agent (divisions), both at Chicago.

NEW YORK CENTRAL—Robert S. Eisenhauer (above), has been appointed to the newly created position of director of public relations at New York and will be responsible for present and expanding community, press, radio, TV and special services. Mr. Eisenhauer previously served as director of public relations and advertising for Chesapeake Industries, Inc.

SOUTHERN PACIFIC.—Walter Will has been appointed shop superintendent, system maintenance of way repair shop, West Oakland, Cal., to succeed **Theodore S. Bean,** who has become assistant general superintendent maintenance of way shops and equipment, San Francisco.

TEXAS & NEW ORLEANS.—R. A. Hodges has been appointed district freight and passenger agent at Austin, Tex., succeeding **B. B. Lacey.**

OBITUARY

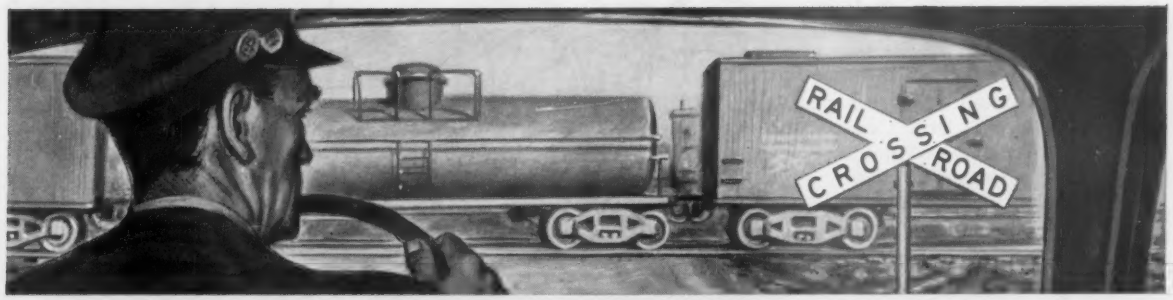
DELAWARE & HUDSON.—Orville W. Stephens, who was appointed engineer maintenance of way at Albany, N. Y., on January 1, died March 10, after a brief illness.

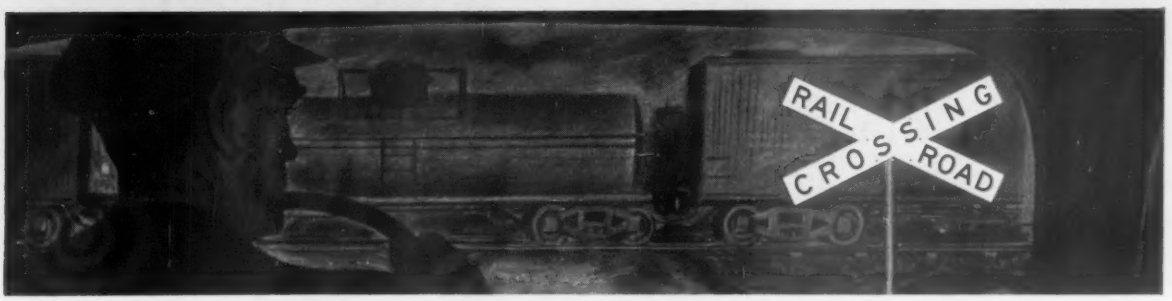
Charles M. Hopton, 79, retired special assistant to the chief operating officer of the **Missouri Pacific,** died March 12 at St. Louis.

Walter S. Snodell, general agent—passenger of the **Nashville, Chattanooga & St. Louis** at Chicago, died there March 4.

James G. Wishart, 76, retired assistant chief engineer of the **Rock Island,** died March 18 at Chicago.

Crossbucks of "SCOTCHLITE" REFLECTIVE SHEETING look *alike* both day and night!





Crossbucks of "Scotchlite" Reflective Sheeting stop accidents, cut maintenance costs

Maintenance costs *down* . . . safety standards *up* 24 hours a day! That's the story behind crossbuck reflectorization with "Scotchlite" Reflective Sheeting.

Durable crossbucks of "Scotchlite" Reflective Sheeting are easy to make and erect. They *never* need repainting . . . free maintenance crews for other jobs. According to an American Railway Bridge and Building Association report, cost records show a saving of about 12% on reflectorized signs over ordinary painted signs during two three-year paint cycles.

Reflectorized crossbucks give clear, bright day and night visibility, too . . . fast moving nighttime motorists get as much as ½ mile warning of tracks ahead, even in rain or snow.

Get the story of *reflective* safety and economy for your road now. Send the coupon below for complete information on brilliant, long-lived crossbucks of "Scotchlite" Reflective Sheeting.

LEADING RAILROADS CHOOSE CROSSBUCKS OF DURABLE "SCOTCHLITE" SHEETING

WIDE ANGLE FLAT-TOP®
REG. U. S. PAT. OFF.
SCOTCHLITE
BRAND
REFLECTIVE SHEETING

The terms "Scotchlite" and "Flat-Top" are registered trademarks of Minnesota Mining & Mfg. Co., St. Paul 6, Minn. General Export: 99 Park Avenue, New York 16, N. Y. In Canada: P. O. Box 757, London, Ont.

Minnesota Mining & Mfg. Co.
Dept. FQ- 36, St. Paul 6, Minn.
Send details on dollar-saving, life-saving crossbucks of "SCOTCHLITE" Reflective Sheeting.

Name_____
Company_____
Address_____
City_____ Zone____ State_____

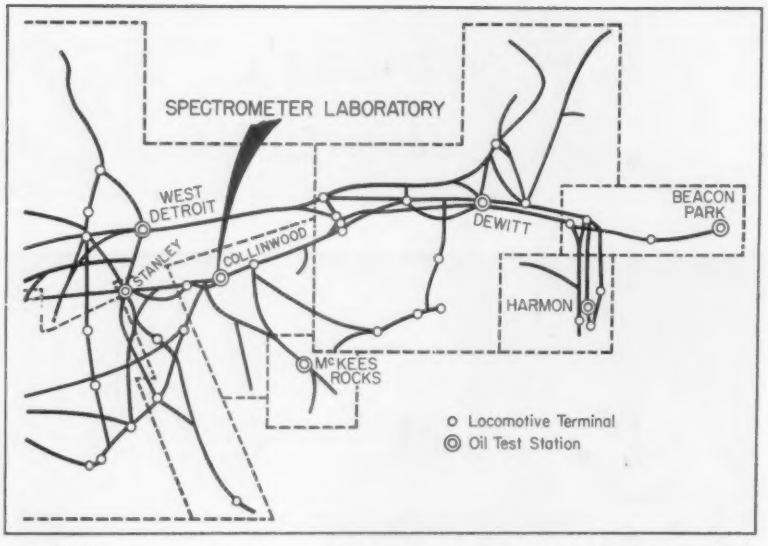
(Continued from page 38)

in the cooling system. The remainder of the elments are not regularly recorded, but can be used to identify a fuel or lubricating oil by determining the constituents of its additive treatment.

Like the oil test stations, the petroleum research laboratory can issue corrective action requests. These can be telephoned to the terminal concerned if results indicate that a scored crankshaft or other major failure would result if immediate action is not taken. Orders can be issued to have a unit shut down on the road if it appears advisable.

Interpretation of spectrometric results is still under study. The Central does attempt to specify the engine component which is causing trouble. Records are kept to show the accuracy of each corrective action notice. As this system is perfected, it is hoped that better pinpointing of trouble will result. Bearings made of bronze would show a rise in copper and tin in case of excessive wear. Trimetal bearings would also show a rise in lead concentration. Chrome plated liners if scored would show a rise in chromium.

With this sort of information, plus the frequency of failure and correlation between metal concentrations and the type of failure, it is expected that greater accuracy will be brought to the corrective action notices.



OIL TEST stations are assigned locomotives maintained at certain terminals on the NYC. Map shows the organization of the eastern portion of the system. Locomotives under jurisdiction of West Detroit operate on the Michigan Central. Big Four district test station is at Beech Grove near Indianapolis. Chicago area is handled through the oil test station at Englewood.

In the last half of 1955 it was estimated that nearly 40 crankshafts had been saved through the spectrometric examination of lubricating oil. Many other engine troubles have been detected before they caused serious engine damage. At the same time, the locomotive terminal and oil test station examinations are extending lubricating oil mileage and detecting conditions which could impair the lubricating qualities of the oil.

The NYC no longer makes periodic oil changes. Lubricating oil is only changed when it is found to contain excessive dirt, water contamination, fuel dilution, or to be oxidized. Spectrometric analysis and actual mechanical failure are also reasons for oil change.

On January 1, 1955, there were 64 diesel units which had had no oil change for at least one year. On January 1, 1956, there were 1,022 units which had this record. Detection of slight water and fuel leaks before the oil was badly contaminated had made it possible to avoid many potential oil changes. Lubricating oil filters are no longer changed on a periodic basis, but as indicated by the conditions of crankcase oil passing through them. Only when the oil shows excessive dirt are filters changed. This practice has greatly reduced filter consumption.

See advertisement on page 19

With New Developments Happening Every Day...

Progress is the Theme

of the 18th Annual

Passenger Traffic Number

May 21, 1956 issue

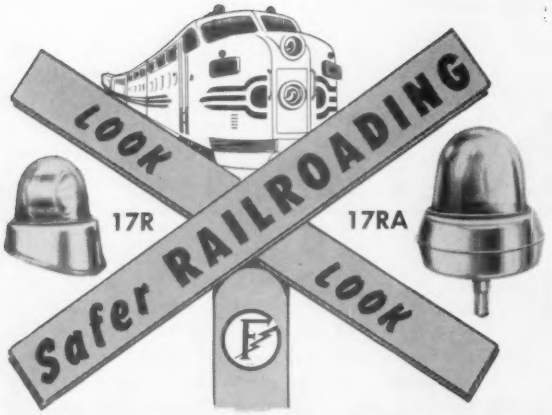
- **Progress in new trains**
- **Progress in passenger department research**
- **Progress in building traffic**
- **Progress in handling reservations**
- **Progress in advertising**

You will want to know what is happening and what is ahead in the passenger field—and the 18th Annual Passenger Traffic Number of Railway Age will give you a fast-moving picture of developments.

Here's another Railway Age service that demonstrates why Railway Age is a magazine railway men elect to read, and why it is not only the Workbook of the Railways, but the Workbook of Advertisers too.

Here, manufacturers will have the opportunity to feature their products in an issue that, except for the week's news and regular features, is concentrated on passenger service and passenger equipment.

RAILWAY AGE | Workbook of the Railways



NOW, the FEDERAL Beacon Ray light, long a familiar sight on fire trucks, police cars, and ambulances, enters a new field!

In railroading the Diesel is king; gone is the romantic old steam engine that warned of its approach with a great huffing, puffing and clanking. The Diesel quietly sneaks up on unwary employees to the detriment of safety records.

In railroading, the Beacon Ray is going on Diesel switchers to provide visual warning day and night, to pinpoint their location in large switch yards and terminals and to act as flagman on cabooses. Stationary applications at terminals, interlockings and drawbridges, for work trucks and other off-track maintenance-of-way equipment are other uses for the FEDERAL Beacon Ray light.

The Beacon Ray is now available in models 17R and 17RA for railroad installations. Write today for literature and include information about your particular requirements.

FEDERAL SIGN and SIGNAL Corporation 8780 S. State St., Chicago 19, Ill.

ADVERTISERS IN THIS ISSUE

Alco Products, Inc. 14, 15
Agency—Harzard Advertising Company

Bethlehem Steel Company 1
Agency—Jones & Brakeley, Inc.

Classified Advertisements 44

Electro-Motive Division, General Motors Corporation ..... Front Cover
Agency—The Kudner Agency, Inc.

Federal Sign & Signal Co. 44
Agency—Edgar Walter Fischer & Assoc.

General Electric Company 36, 37
Agency—G. M. Basford Company

General Railway Signal Company ..... Back Cover

Iron & Steel Products, Inc. 44

Jackson Vibrators, Inc. 20
Agency—Stevens, Inc.

Minneapolis Honeywell Regulator Co. 35
Agency—Foote Cone & Belding

Minnesota Mining & Mfg. Company 41
Agency—Ruthrauff & Ryan, Inc.

Motorola, Inc. ..... Inside Front Cover, 17
Agency—Kolb & Abraham Advertising

National Malleable & Steel Castings Company . 19, 40, 42
Agency—Palm & Patterson, Inc.

SKF Industries, Inc. ..... Inside Back Cover
Agency—O. S. Tyson & Company, Inc.

Summer & Co., Inc. 44

Union Switch & Signal Division of Westinghouse Air Brake Company 2
Agency—Batten, Barton, Durstine & Osborn, Inc.

Waukesha Motor Company 6
Agency—The Cramer Krasselt Co.

Westinghouse Air Brake Company 4
Agency—Batten, Barton, Durstine & Osborn, Inc.

CLASSIFIED ADVERTISEMENTS

FOR SALE
RAILWAY EQUIPMENT
Used—As Is—Reconditioned

RAILWAY CARS
All Types

SERVICE-TESTED ® FREIGHT CAR REPAIR PARTS
For All Types of Cars

LOCOMOTIVES
Diesel, Steam, Gasoline, Diesel-Electric

RAILWAY TANK CARS and STORAGE TANKS
6,000 - 8,000 and 10,000-gallon Cleaned and Tested

SPECIAL OFFERING
1—80-Ton 0-6-0
Lima Steam Switching Locomotive
Excellent I.C.C. Condition

RAILS
New or Relaying

IRON & STEEL PRODUCTS, INC.
"ANYTHING containing IRON or STEEL"

General Office
13486 So. Brainard Ave.
Chicago 33, Illinois
Phone: Mitchell 6-1212

New York Office
50-c Church Street
New York 7, New York
Phone: BEekman 3-8230

OPENING

An old established Railway Supply Company has opening for young man as sales representative in Eastern territory. Give education, experience, and age. Address Box 2712, RAILWAY AGE, 79 West Monroe St., Chicago 3, Ill.

MANAGEMENT POSITION WANTED

—With railroad or supplier. Over 20 years experience in locomotive design, application to train service, some operating experience. Address Box 778, RAILWAY AGE, 30 Church St., New York 7, N.Y.

OPENING

Good opportunity and permanent position for young, ambitious sales representative with knowledge of railway cars and car material with a well-established 30 year old firm which has Chicago headquarters. Apply by submitting resume of experience, personal background, and salary requirements to Box 34, RAILWAY AGE, 79 West Monroe Street, Chicago 3, Illinois.

FOR SALE

2 Whitcomb Diesel Electric Locomotives, 80-ton, with two Buda Engines, 325 h.p. each. Built new in 1944.

SUMMER & CO., INC.
P. O. BOX 2053
BUFFALO 5, NEW YORK

See following page for Advertisers' Index and Agencies

AVAILABLE NOW

Official, Class I railroad, sixteen years mechanical experience, ten years with same company, desires change to warmer climate. Address Box 262, RAILWAY AGE, 79 West Monroe Street, Chicago 3, Illinois.

KEEP BUYING BONDS

SKF

Traction Motor Bearings

. . . can be factory serviced at 1/3 to 1/2 the cost

A new, safe and economical way to inspect bearings. Traction Motor Bearings are returned to SKF where they are thoroughly inspected and tested. Parts that do not pass rigid inspection are replaced. The bearing is then returned to you in first-class condition. If the bearing is unreclaimable it is destroyed, and there is no charge for the SKF service.

. . . run 500,000 miles between overhauls

Because of SKF's many pioneering achievements in Traction Motor Bearing design and improved manufacturing methods over the past 30 years, railroads have been able to more than *triple* bearing running time — from 150,000 miles between overhauls up to the present 500,000 miles. This increase — plus further increases to come — is the result of SKF's continuing research program and close association with the railroad industry.

7706

Free

TO RAILROAD MEN

Arrange with your SKF distributor for a free Traction Motor Bearing Clinic and a showing of our full-color, sound slide film on inspecting Traction Motor Bearings. Get full benefit of SKF's 30 years of Traction Motor Bearing experience.

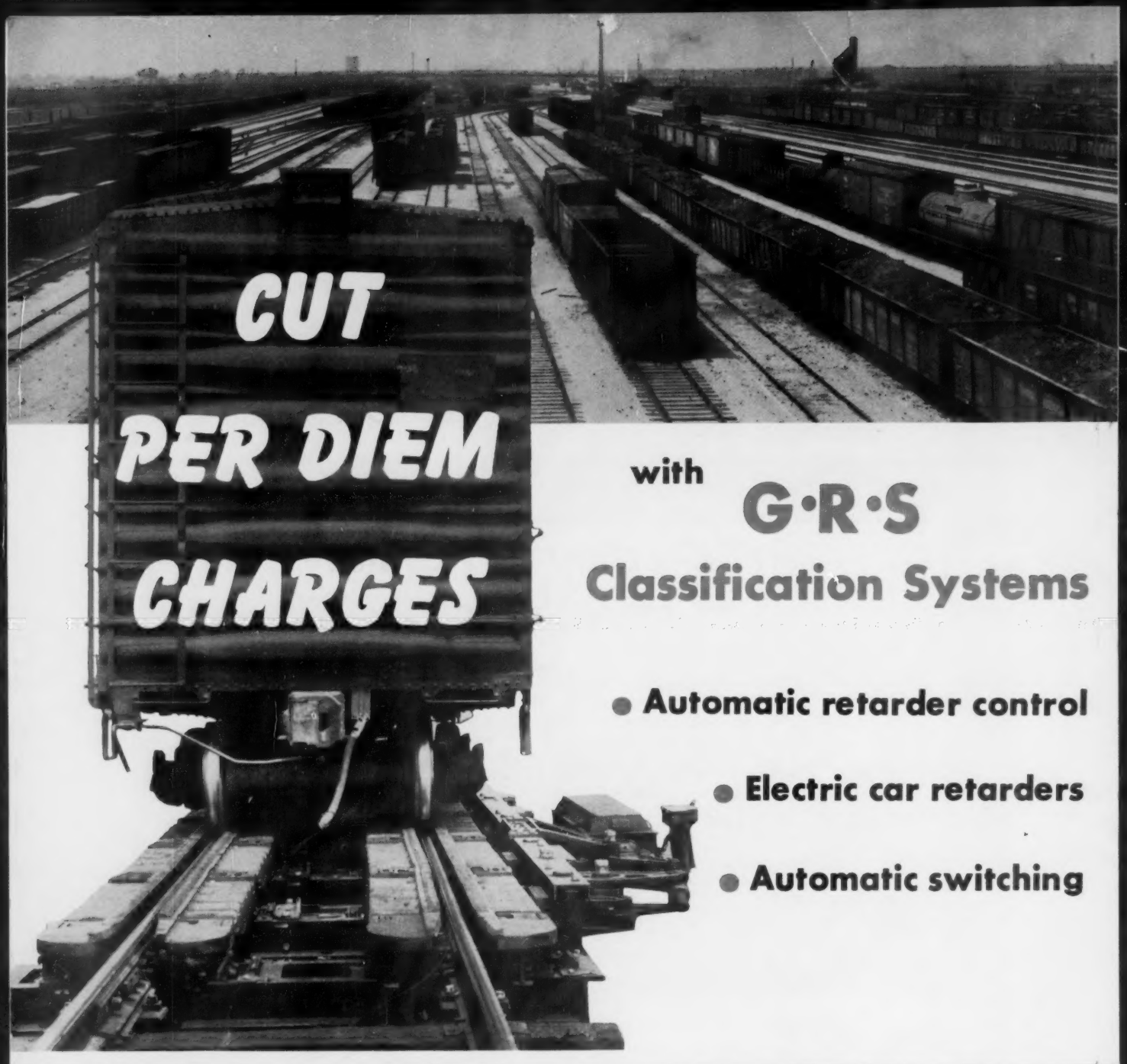
SKF®

TRACTION MOTOR BEARINGS

SKF INDUSTRIES, INC., PHILA. 32, PA.—
manufacturers of **SKF** *and* HESS-BRIGHT® *bearings.*

SUBSIDIARY

TYSON BEARING CORPORATION, MASSILLON, OHIO
—manufacturers of Tyson tapered roller bearings.



with

G·R·S
Classification Systems

- **Automatic retarder control**
- **Electric car retarders**
- **Automatic switching**

The present level of per diem charges makes it more important than ever to keep freight on the move, to eliminate delays that hold foreign cars on your road longer than necessary.

Time lost in classification yards is a common source of delay. One road found, for example, that total detention of cars averaged over 21 hours in two rider hump yards.

After careful study, the road replaced these yards with a new yard, equipped with G-R-S electric car retarders and automatic switching. What happened? Average detention of cars was cut about 12 hours. *Per diem charges were reduced $687,000 annually.* At the same time, service to patrons was materially improved.

Our engineers can help you plan yards that will speed classification, make better use of equipment and man power, give you the full cost-cutting benefits of G-R-S car classification systems. Ask your G-R-S district office to get you this service.

GENERAL RAILWAY SIGNAL COMPANY

ROCHESTER 2, NEW YORK

2719

NEW YORK 17, NEW YORK CHICAGO 1, ILLINOIS ST. LOUIS 1, MISSOURI